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Compounding Latex

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THE following is a continuation of the information on United States patents relating to the compounding of latex, from our July 1, 1932, issue.

46. Teague, 1,634,124, June 28, 1927. This patent describes a method of thickening and stabilizing latex by adding ammonium soaps. An example of latex, so treated, suitable for spreading on fabrics is the following: 100 parts rubber (as 60% solids latex), 5 parts glue, 0.6-part ultramarine blue, 200 parts lithopone, 22 parts ammonium compound of cocoanut oil (dry basis), 1 part zinc oxide, 3 parts sulphur, 0.5-part zinc dimethyl-dithiocarbamate. The following is an example of a physically thickened and stabilized latex compound using normal latex: 100 parts rubber (as normal latex containing about 33% rubber by weight), 35 parts of the ammonium compound of linseed oil by weight, 3 parts sulphur by weight, 125 parts whiting by weight, 5 parts glue by weight, 1 part zinc oxide by weight, 0.6-part ultramarine blue by weight, 0.5-part zinc dimethyl-dithiocarbamate by weight.

The above 2 compounds may be vulcanized in air in 2 hours at 212° F.

In still another form of the invention it has been found that latex may be thickened and stabilized by adding saponin. The following is an example: 100 parts rubber by weight (as 60% solids latex), 200 parts lithopone by weight, 1 part saponin by weight, 0.5-part ultramarine blue by weight, 1 part zinc oxide by weight, 3 parts sulphur by weight, 0.5-part zinc dimethyl-dithiocarbamate.

47. Loomis and Stump, 1,634,293, July 5, 1927. Articles are molded from the following composition: wood flour 15 gms., zinc oxide or clay 15 gms., rubber latex, 36% rubber, 10 cc., sulphur 5% of rubber used, accelerator, water 700 c.c. This mixture gives about a 10% rubber content in the material. The fillers are dispersed in water and then added to the latex.

48. Cadwell, 1,641,573, Sept. 6, 1927. The object of the invention is to provide a method of treating rubber latex so that the rubber contained therein will vulcanize at ordinary temperatures after the aqueous portion of the latex has been removed. The following example is given: 100 parts by weight of rubber in the form of ammonia preserved latex containing 20% or more of rubber, 2 parts by weight of zinc oxide, 3 parts by weight of sulphur, and 1 part by weight of zinc dithiobenzoate. This mixture will not vulcanize appreciably at ordinary temperatures while it remains in the form of latex. The ammonia used as a preservative, together with other ingredients of the latex, reacts with the dithiobenzoate to decompose it sufficiently to weaken its accelerating properties.

Vulcanization of rubber in the form of latex may be accomplished at ordinary temperatures by using non-nitrogenous carbon disulphide derivatives such as salts of thiol acids, disulphides, ammonia sulphides, xanthogenates, etc. Vulcanization in the latex, where the above accelerators have been used, may be retarded by the addition of an excess of basic material such as ammonia, sodium hydroxide, trisodium phosphate, strongly basic amines such as piperidine, dimethyl amine, trimethyl amine, triethyl amine, and any volatile primary aliphatic amines.

The process may also be carried out with a zinc salt which contains nitrogen in a form in which it may be liberated from the salt as ammonia. One hundred parts of rubber in the form of ammonia preserved latex containing about 20% of rubber are mixed with 3 parts of sulphur. Shortly before the water and the ammonia are allowed to evaporate the latex-sulphur mixture may be treated with a solution of 1.7 parts by weight of zinc chloride dissolved in 15 parts by weight of water and 6½ parts by weight of concentrated ammonia. An aqueous solution of 1 part by weight of sodium dithiobenzoate is then added to the latex mixture. This latex composition will not vulcanize appreciably at ordinary temperatures, but the rubber obtained therefrom after evaporation of the water and accompanying removal of the ammonia will vulcanize at ordinary temperatures in 24 to 48 hours.

49. Kelley and Wolfe, 1,644,730, Oct. 11, 1927. Cement

is made from ammonia preserved latex treated with boric acid. Assuming that the latex contains 0.75% of ammonia, it may be treated by adding to 100 parts of it by weight 25 parts of water and 8.25 parts by weight of boric acid. Latex so treated, in addition to being substantially freed from the odor of ammonia, has increased viscosity.

Instead of using boric acid alone to remove the ammoniacal odor, either boric acid or borax may be used in combination with a polyhydroxyl compound, such as dextrose, invert sugar, or glycerine, in which 2 OH groups are bound to adjacent carbon atoms and react with the boron compound to produce a complex acid somewhat stronger than boric acid.

50. McGavack, 1,647,805, Nov. 1, 1927. This patent relates to a method for producing a concentrated latex of low viscosity. Latex of a normal solids content, say 33%, has mixed therewith a relatively small amount of a suitable creaming agent such as dried pectin, Irish moss, Karaya gum, etc.; these materials are in a substantially non-hydrolyzed form. As examples of the use of these creaming agents the following are given: Powdered pectin is prepared in a 3% aqueous solution by rapidly stirring into water at room temperature. The prepared solution is then used at once by adding enough of the solution to make 0.7 part of the powdered pectin to sufficient latex to yield 100 parts of rubber. Separation starts in about 30 minutes to 1 hour and will be essentially complete in about 30 hours. When Karaya gum is used, it is prepared in the form of a 2% aqueous solution made as in the case of the pectin solution, and sufficient of the solution to make 0.5 part Karaya gum is added to enough latex to yield 100 parts of rubber. It is sometimes necessary slightly to heat the gum when putting in solution as it disperses and hydrolyzes less readily than pectin. Care should be taken not to carry this too far. Initial creaming starts in from 2 to 5 hours and is essentially complete in from 30 to 50 hours, depending upon the thoroughness with which the Karaya gum is distributed in the latex.

When using Irish moss, the ordinary commercial moss is leached with cold water to form a 1% solution, and enough of the Irish moss is added to sufficient latex to yield 100 parts rubber. The creaming or separation proceeds in this case about as with Karaya gum.

51. Gibbons, 1,654,167, Dec. 27, 1927. In carrying out the invention in its preferred form 100 parts of rubber (in the form of latex containing 2% ammonia and having approximately 35% solid content) is combined with 1 part of zinc dimethyldithiocarbamate, 1 part of zinc oxide, and 3 parts of precipitated sulphur. The zinc dimethyldithiocarbamate, zinc oxide, and sulphur are mixed to a thin paste with dilute ammonium hydroxide. The paste is then added slowly with constant stirring of the latex. Upon drying and heating the resulting composition to 212° F. for 40 minutes, vulcanization is accomplished. The stability of the composition formed as above is influenced by the quantity of zinc oxide present. The lower the amount of zinc oxide, the less the tendency to coagulate. Instead of using latex containing 35% solid material, higher and lower concentrations have been satisfactorily employed. Instead of desiccation of the composition, coagulation may be carried out; and in case the coagulant used, such as acetic acid, dissolves the zinc oxide or other ingredient, ordinarily more of this ingredient is preferably employed in the composition, or zinc acetate may be employed.

Example 2: 100 parts of rubber (in the form of latex containing 2% ammonia and having approximately 35% solid content) are combined with one part of tetramethylthiuramdisulphide, 2 parts of zinc oxide, and 3 parts of sulphur. The tetramethylthiuramdisulphide, zinc oxide, and sulphur are mixed to form a paste with dilute ammonium hydroxide and added as before to the latex. Drying and heating the resulting composition to 212° F. for 40 minutes accomplishes vulcanization. It appears that the vulcanizing ingredients react while in the latex. The resulting composition consists of latex, zinc dimethyldithiocarbamate, zinc oxide, and sulphur. The remarks concerning the stability and the coagulation given in Example 1 apply also to the composition of the present example.

Example 3: The following composition is made up of 100 parts of rubber (in the form of latex containing 2% ammonia and having approximately 35% solid content), 25 parts of zinc oxide, 60 parts of sulphur, 5 parts of tetramethylthiuramdisulphide, and 5 parts of glue. The zinc oxide, sulphur, tetramethylthiuramdisulphide, and glue are combined with dilute ammonia to form a thin paste, which is gradually stirred into the latex as heretofore. This mixture may be sprayed to give a smooth film to serve as a protective and decorative coating, for example on wood, metal, and other materials. When it is maintained for 14 hours at 265° F., a hard film results which resists the action of acids other than strong nitric and sulphuric acid and of organic solvents.

Example 4: The following composition is prepared: 100 parts of rubber (in the form of latex containing 2% ammonia and having approximately 35% solid content), is combined with 1 part of tetramethylthiurammonosulphide, 2 parts of zinc oxide, and 3 parts of sulphur. The tetramethylthiurammonosulphide, zinc oxide, and sulphur are mixed to form a paste with dilute ammonium hydroxide and added as before to the latex. Upon drying and heating the resulting composition to 212° F. for 40 minutes, vulcanization is accomplished.

52. Owen, 1,656,953, Jan. 24, 1928, Reissue 17,541, Dec. 31, 1929. A waterproofing composition for paper or fabrics is made from 100 parts rubber as latex, 100 parts aluminum resinate, 100 parts gilders whiting, 50 parts medium spindle oil, 15 parts glue. The aluminum resinate and the filler are mixed in any form with a water solution of the glue. The mixture is then passed through a paint mill to complete the dispersion, and the resulting product is stirred into the latex. This product is then mixed with a water dispersion of the oil.

Another formula given is: 100 parts rubber as latex, 10 parts aluminum resinate, 50 parts talc, 10 parts glue.

53. Teague, 1,660,213, Feb. 21, 1928. A method of coloring latex consists in dissolving a water insoluble dye in a solvent and emulsifying the solution in latex. For example, an oil soluble dye such as nigrosine is dissolved in sulphonated castor oil. The oil solution is then emulsified in the aqueous dispersion of rubber, either with or without an additional emulsifying and/or protective agent.

The emulsification of the dye solution in the latex is facilitated by adding a polar compound to the dye solution. A polar compound is understood to be a chemical compound which acts as a bridge between 2 relatively immiscible liquids. Sulphonated castor oil is a satisfactory example. Instead of this, other sulphinated or chlorinated oils, or orthotoluidine, sodium sulphanilate, thiourea, sodium salicylate, ammonium (or sodium or potassium) linoleate or similar soap, saponin, sodium napthalene sulphonate, and other compounds having similar properties may be employed.

54. Hopkinson, 1,661,828, Mar. 6, 1928. This invention provides a vulcanized rubber composition that is suitable for paving roads, pavements, floorings, and similar purposes, that is durable, noise absorbing, and relatively inexpensive, and that affords a rough or abrasive surface of a non-slippery character suited for traffic, be it pedestrian or vehicular.

Two batches, A and B, are separately prepared of the following ingredients, proportioned by weight as indicated:

Ingredients	A	B
Rubber in latex	100	100
Zinc oxide	50	50
Sand (fine)	800	800
Paraffin wax	10	10
Coal tar	60	60
Sulphur	10	10
Infusorial earth	100	100
Refined mineral oil (No. 8)	25	25
Oxy normal butyl thiocarbonic acid disulphide	8	...
Di-benzyl amine	...	8

This is a lean compound, i. e., one rather low in rubber, suitable for paving where much cushioning or yielding is not required. A more yielding covering, or surface layer, may be obtained with the same ingredients, proportioned as indicated:

Ingredients	A	B
Rubber in latex	300	300
Zinc oxide	60	60
Sand (fine)	800	800
Paraffin wax	15	15
Coal tar	180	180
Sulphur	30	30
Infusorial earth	100	100
Refined mineral oil (No. 8)	75	75
Oxy normal butyl thiocarbonic acid disulphide	12	...
Di-benzyl amine	...	12

Whatever may be the composiiton of the 2 batches, A and B, they are separately prepared, one containing one or more of the vulcanizing ingredients, and the other one or more of the complementary vulcanizing ingredients, which, separated, are vulcanizingly inert, or substantially ineffective, under the temperatures obtaining during their manipulation prior to association of the batches and to their, at least, final vulcanization *in situ* on the foundation. In the examples oxy normal butyl thiocarbonic acid disulphide is distributed in one batch and di-benzyl amine incorporated in the other.

Separate preparation of the 2 batches may be accomplished variously. They may each be agitated in a tank and discharged through a nozzle into a jet of air blown past the same. Discharge of the batches from the mixing tanks may be facilitated by adding water or by employing an extending device such as a worm. The sprayed particles of the batches are preferably projected by the air jet into an atmosphere of air or inert gas at a temperature and humidity suited to the moisture contained in the particular batch and to the character of the ingredients, particularly the vulcanizing promoters or accelerators. The sprayed particles collect on the floor of the chamber in a dry condition and in more or less friable mass. Thus dry batches may be prepared, ready for laying, or otherwise manipulating, before vulcanization.

55. Jacobsohn, 1,665,500, Apr. 10, 1928. Gas impermeable fabrics are prepared using a mixture of viscose and latex. Dissolve 0.29 gms. of tetramethyl thiuram disulphide in 15cc. of acetone. Add this solution quickly to 400 cc. of water at 20° C. This is immediately followed by the addition, with vigorous agitation, of 70 gms. of rubber latex containing 40% of solid matter. It is essential that this operation be very quickly carried out in order to prevent the coagulation of the first substance added. Three gms. of zinc sulphate, dissolved in 10 cc. of water, are treated with 7cc. of ammonia water containing 29% of ammonia. The white precipitate formed at first should be completely redissolved before proceeding further. This solution is then added to the latex solution above, agitating well. Next 250 gms. of viscose are added to this mixture and stirred well until a homogeneous solution results.

To prepare a gas impermeable flexible fabric from the viscose-latex mixture, the fabric is first sized with a suitable gelatine or glue adhesive. The prepared viscose-latex mixture, prepared as outlined above, is then spread upon the sized fabric, a total of 8 to 15 coats being spread, depending upon the impermeability and weight desired. Each coat is dried by passing a current of air at a temperature of 40° C. over its surface before applying the next coat. When the last coat is dry, the fabric is passed through a bath composed of an aqueous solution containing 25% magnesium sulphate at a temperature of 30 to 40° C. It is then passed through a bath containing a 2% aqueous solution of sodium bisulphite until it becomes white. Next it is washed with cold water to remove water soluble salts and passed through a bath containing 15% of glycerine by volume.

56. Wescott, 1,668,439, May 1, 1928. Abrasive articles composed of granules of abrasive material are bonded together by films of latex rubber; the rubber contains a minor amount of distributed asbestos fiber and also hemoglobin.[1]

57. Westcott, 1,668,475, May 1, 1928. Abrasive articles are made by mixing abrasive particles and cotton fibers with latex and a vulcanizing agent, forming the articles of the mixture, and vulcanizing.

58. Hansen, 1,668,961, May 8, 1928. A plastic composition comprises from 25 to 75% of rubber as latex and from 25 to 75% of paper mill sludge.

59. Teague, 1,673,649, June 12, 1928. In many instances it is desirable to lay a relatively thick coating of rubber latex composition on a fabric or other supporting material in a single operation. To carry out such a process it is necessary to impart to the latex composition a uniform rate of drying to prevent the formation of films of rubber on the surface and thereby prevent the exit of moisture from within the body of latex composition.

A rubber latex composition containing 40% of solids films very readily and is somewhat difficult to dry uniformly throughout its mass. By adding any one of the materials hereinafter listed in the proportions specified to 100 parts of rubber as latex containing approximately 40% of solids, the filming tendency of the latex may be greatly reduced: formaldehyde (37% solution) 15 cc., glycerol 15 parts, saponin 1 part, sulphonated castor oil 15 parts, ammonium stearate (dried) 12.5 parts, ammonium caseinate 15 parts, ammonium soap of palm oil including the glycerol (dry) 15 parts, ammonium soap of linseed oil including the glycerol (dry) 15 parts, sodium silicate (52° Bé.) 10 parts, litharge 15 parts, lead thiosulphate 3 parts. In each case 10 parts of 26% ammonium hydroxide are also added.

60. Smith, 1,678,022, July 24, 1928. The patent describes a method of separating water soluble non-rubber constituents from the rubber particles in latex and recovering a water-dispersible rubber freed of the greater portion of such non-rubber materials. Ordinary ammonia preserved latex is freed from the ammonia by any suitable means, and a small amount of a preservative such as phenol (0.3%) is added. To 100 parts of this latex 10 parts of a 10% solution of a mixture of 3 parts of hydrated primary sodium phosphate and 1 part of hydrated secondary sodium phosphate are added, and 400 parts of water. The mixture is stirred vigorously and allowed to stand. After several days the rubber containing portion rises to the surface and leaves a clear serum beneath.

61. Wescott, 1,680,234, August 7, 1928. Ordinary asbestos mixed with latex causes coagulation. This patent states that asbestos washed with 5 to 10% commercial sulphuric acid avoids this difficulty.

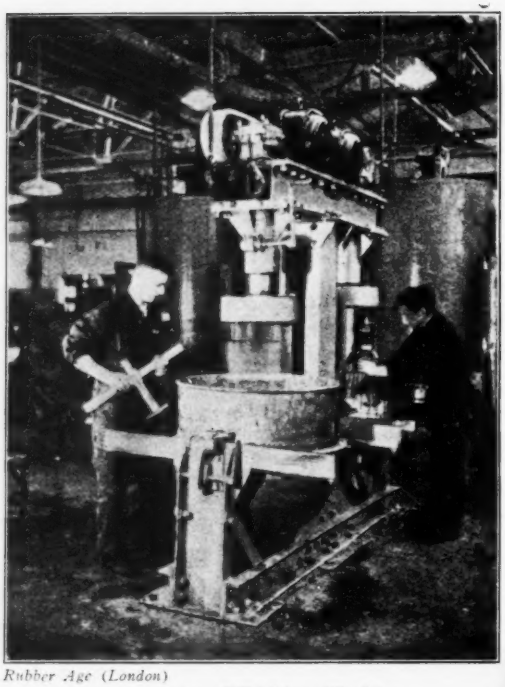
[1]Details are given in "Rubber Grinding Wheels," J. Rossman, INDIA RUBBER WORLD, June, 1931, pp. 63-65.

(*To be continued*)

THE TERM "SUN CRACKING" AS APPLIED TO RUBBER goods should be abolished in favor of "atmospheric cracking," according to Van Rossem and Talen, who claim that experiments made by them prove that it is not sunlight but atmospheric ozone that does the harm and then only when the vulcanized material is stretched.

Froth Rubber

Pouring and Curing Sponge Rubber Air Cushions



Rubber Age (London)

Fig. 1. Latex Whisking Machine

THE industrial development of latex is introducing new and diverse uses for rubber applied by methods equally new and strange in rubber technology. One of these advanced methods of rubber working is that of pouring rubber in liquid form into molds for shaping and curing the article. Nothing could be more unlike the standard method of molding coagulated rubber than the method practiced by a prominent English rubber company in the production of sponge rubber upholstery.[1] This ideal cushion seat is highly regarded by automobilists for its easy riding quality and ability to nullify vibrations due to the motor or obstacles on the road. Should this application gain the hoped-for approval of motorists it will furnish an outlet of considerable magnitude for the rubber plantation industry. Whatever the industrial outcome of this invention, the method of forming cellular air cushions is unique in interest and novelty.

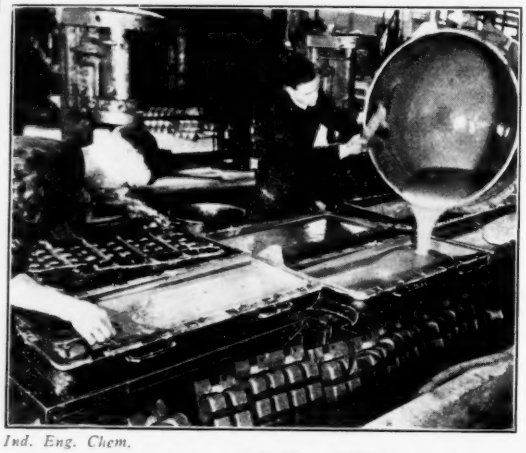
Latex or other dispersion of rubber is lightly compounded with suitable ingredients and a froth forming material such as soap, soap forming ingredients, or saponin. Added also are substances having delayed coagulating action or which render the emulsion capable of gelling by the application of heat. The mixture is then stirred vigorously and beaten to a froth in a whisking machine similar in action to an egg beater. A duplex machine of this sort is pictured in Figure 1. The wire whisk is given a rapid rotary motion which is combined with rotation of the whisk around the center of the pan by means of epicyclic gearing. This action does not produce frothing as in soapy water, but entrains air in the mixing transforming it into a perfectly liquid mass containing innumerable air bubbles uniformly distributed in it.

The length of the operation depends on the degree of sponginess desired, but averages 20 minutes. About 1½ minutes before completion of the whisking a coagulating accelerator is added. The mixture is then ready for pouring.

The molding operation is illustrated in Figure 2. The molds are shallow pans. As they are filled with the whisked mixture, they are covered by sectional top pieces. Each section is perforated with holes for exit of air. The mixture overflowing through these exits indicates that the mold is correctly filled. Each cover section has on its lower side projections serving as cores to partition the molded cushion into cells.

After pouring, the molds are allowed to stand about 15 minutes for the contents to gel. The molds next travel by conveyer through a long trough of water heated to about 200° F. The passage of the molds through the trough requires about an hour, during which time vulcanization is completed.

Removal of the cured cushions from the molds is done as shown in Figure 3. The molds are made of aluminum alloy and are easily handled. The sectional top pieces are lifted out of the cellular cushion, as pictured, which frees it so that it can easily be stripped from the mold.



Ind. Eng. Chem.

Fig. 2. Pouring and Molding Whisked Latex

Sponge hard rubber produced from mixings high in sulphur can be made in complicated shapes by the same molding facilities as cellular air cushion rubber. It is suitable for storage battery separators and light porous boards.

Ind. Eng. Chem.

Fig. 3. Stripping Molds after Vulcanizing

[1]Dunlop Rubber Co., British Patents No. 332,525 (1930) and No. 359,584 (1931), and U. S. Patent No. 1,852,447 (1932).

Federal Excise Taxes

Report of the Legislative Committee of the Rubber Manufacturers Association

THE Legislative Committee of the Rubber Manufacturers Association has conferred with the Department of Internal Revenue, the Assistant Secretary of the Treasury, and his staff regarding clarification of Title 4 of the Revenue Act of 1932 and Regulations 46 issued thereunder. The Department's official ruling will undoubtedly concur with the report that follows, but details may vary.

R. M. A. Legislative Bulletin 89

1. In the matter of parts or accessories (See Article 41 of Regulations 46), the Department differentiates between a raw material which, with some fabrication, will become an accessory or part, and an accessory or part as such. For instance, matting, sold in long lengths and requiring cutting to fit a particular automobile, is considered a raw material. The matting when cut and fitted is a taxable accessory. Repair materials, patches, gum stock, polishes, etc., are not parts or accessories. Appended is a rather complete list of products manufactured by the rubber industry, with a notation as to each item of its taxable or non-taxable character. This list was gone over with the Department, and while the ruling as to taxability is not final, it is believed to be accurate. Any member having an article as to which he has any doubt should submit samples, pictures, or catalog descriptions of it to the Rubber Manufacturers Association, which will secure from the Department of Internal Revenue a specific ruling regarding its taxability. As a matter of law, it appears possible that any part or accessory to a tire, which has no applicability to a motor vehicle, except as a part or accessory to a tire, may be excluded by reason of the wording of the law itself.

2. The definition of "tires" was very thoroughly considered. The Department acceded to the contention that extruded or molded rubber in bulk lengths and requiring cutting, bending, and fastening to make a hoop is not a tire until so cut. Tiring for toys is excluded unless the toys are capable of carrying a child. In other words the test is whether the vehicle is capable of being used as a vehicle or is only a replica. Thus kiddy car tires and tricycle tires are taxable. Castors are not taxable tires. The miniature tires on advertising novelties, as ashtrays, are not taxable as tires.

3. Rubber-soled shoes will not be held taxable as sporting goods unless they are specially adapted to a sport and are sold for that sport use only. It is suggested that footwear manufacturers send catalogs or present specimens to the Rubber Manufacturers Association for specific rulings if in doubt regarding the tax status of particular products.

4. Tires cut up into sections for advertising or research or demonstration purposes, tires utilized on the resiliometer or other testing apparatus in a factory laboratory, and tires run on test cars where no revenue is derived from their use and where they carry no useful load of persons or freight, will not be considered as a taxable use by the manufacturer.

5. What, if any relief to the tire manufacturer may be obtained by reason of replacements and adjustments under warranties, remains to be seen. The Department finds considerable difficulty in making any allowance, even though a new tire is furnished to the customer at a very much reduced charge, by reason of the fact that the tax is on a weight basis. The Department is disposed to give such relief as it can and has taken this point under advisement. Where the sale of a tire is rescinded, credit may be taken for the tax.

6. At the insistence of the tire manufacturing industry as a whole, the Department and the Treasury will accede to the request for industry average weights upon which tax may be computed. The accomplishment of this is of great benefit to the industry as a whole. Tentatively, the average weights, as computed by the Rubber Manufacturers Association from data furnished by individual tire manufacturers, may be used. A list of those average weights may be obtained from the Association. Solid, cushion, and industrial tires are not included in this list because of the necessity of further checking of such weights. The Department, as soon as it can, will check the averages. Each manufacturer will be called upon to enter into a written agreement with the Department respecting the use of these averages, and the industry will be honor bound to advise the Department, through this Association, of any circumstances which might have the effect of changing the industry averages.

Copies of a "Waiver and Agreement" form which has been approved by the Treasury Department can be obtained from the Association. It is urged that tire manufacturers immediately execute these and return both copies to the Association, which will forward them to the Treasury Department. The Department will retain one copy and will sign and return the other to the particular tire manufacturer.

7. Mileage contracts are considered as either leases or uses by the manufacturer (this latter view preferred by the Department). In either event the tax is payable in full when possession of the tire is delivered to the mileage account.

8. If a rubber manufacturer makes only taxable articles and uses lubricating oil in his compound and gasoline or other solvents in his product, he may buy these commodities on exemption certificates. If such manufacturer makes both taxable and non-taxable articles, the Department's view is that he should buy tax-paid oils and gasoline and take credit or secure refund for the tax on such portions as he is able to prove have been used in the manufacture of taxable articles. The Department is firmly opposed to permitting a manufacturer of taxable articles to buy tax-free or to secure refund of tax on lubricating oil used to lubricate the machinery manufacturing such taxable articles.

9. The Department sees no way of changing Article 17 of Regulations 46, respecting sales to states or municipalities.

10. The Department will insist that returns of manufacturer's excise tax shall be made at the principal place of business of the corporation. Consequently one return for affiliated companies will not be permitted. The Department will, however, consider as an individual case any circumstances which are submitted to it.

11. The Department concurred in the Legislative Committee's view that where, in an emergency case and to provide for a delivery at a certain point, a manufacturer borrowed a tire from a dealer, such manufacturer might return another tire of the same kind to the dealer without that transaction being taxable. To guard against abuse of this emergency privilege, it must be understood that the dealer derives no monetary gain from this transaction.

12. Car manufacturers will require from their tire sup-

pliers a breakdown of base band or rim price and the price of the rubber in cases of sales of solid, cushion, and industrial tires. The price of the "rubber portions" will be determined by subtracting from the sales price of the whole tire (including steel base band) the open market price of base bands as such.

List of Rubber Products and Their Taxable Status

LEGEND

T—Taxable.
NT—Not taxable.
PT—Probably taxable.
PNT—Probably not taxable.
?—In doubt. Submit samples or pictures or description and statement of use for specific ruling.
X—Will not be taxable (even though presently classed as taxable) if all tire parts and accessories are excluded by law.

Adjusting Nut Cover—NT.
Air Bags—NT.
Auto Washing and Bath Sponges—NT.
Anti-Freeze—NT.
Back Window Frame Cushion—NT if in bulk lengths, T if cut to size.
Bands
  Rear Axle Hose—?
  Tire Cover—PNT.
Base Bands, Steel, for solid, cushion, and industrial tires—PNT-X.
Battery (Parts)
  Jars, Containers, Vents, Covers, Separators, Fillers } ? NT for time being (being considered).
Bead Grafting Rubber—NT.
Bead Pressure Pad—NT.
Binocular Eye Guard—NT.
Body Rear Panel Spacer—?
Brake Rod Support Cushion—PNT.
Bumpers (Rubber)
  Extruded Shapes cut to length.
  Axle, Front and Rear.
  Center Partition, Glass.
  Deck Lid Lower.
  Door Window Anti-Rattler.
  Door Glass Frame, Front and Rear.
  Door Glass.
  Door.
  Hood Corner.
  Hood Hinge.
  Hood to Fender.
  Hood Side Ventilator.
  Lower Garnish Molding.
  Roof Header.
  Spring, Front and Rear.
  Windshield Header Channel.
  Windshield Lower Corner.
  Body.
  Side Tire Carrier Cover.
  Luggage Rack Base.
  } T in prepared lengths or sizes; NT in bulk lengths.
Bushings
  Hand Rail, Shock Absorber Link Bushing } NT
Carriage and Chair Tiring—T if cut to length; NT in bulk lengths.
Cements—NT
Channel
  All Rubber, Cloth covered—Glass Run, Extruded Rubber, Sponge Tipped, Sponge Tipped Hard Rubber Back, Cloth Lined } T in prepared lengths or sizes; NT in bulk lengths.
Covers
  Hand Brake Lever, Packing Brake, Tie Rod Spring, Transmission Hole } T
Clutch Housing Plug—NT
Cowl Panel Pad—?
Cowl to Frame Spacer Assembly—T if in fitted size.
Cowl Hold Down Plate—?
Cowl Lamp Pad—?
Cushion, Dash to Cowl—?
Cushion, Crankshaft Pulley—?
Cushion, Pedal, Individual—T
Cushions
  Front Fender to Frame—?
  Rear Brake Rod—?
Diaphragms—?
Disks
  Universal Joint and Magneto Coupling—T
  Universal Joint—T
  Water Pump Coupling—T
  General Coupling—T
Distributer Nipples—PNT
Door Check Straps—T
Drive Link Seat—?
Fan Belts—T (See ruling which will soon be issued regarding use for other than automotive vehicles, then NT).
Fender Flaps—T
Flaps
  Drop Center Rim Strips—NT, X
  Universal—NT, X
  Truck and Bus Balloon—NT, X
  In Reels—NT, X
Flexible Coupling Assembly—T
Friction Tape—NT
Gaskets
  Distributer Bar End, Distributer Coil, Fender Lamp, Gearshift Lever, Radius Rod Insulator, Radiator Cap, Radiator Filler Cap, Hose, Brake Cylinder Bleeder Hose, Generator Shaft Coupling } PNT
Gaskets—PNT
  Gearshift Lever Bloc Insert, Gearshift Lever Dust Cover, Gearshift Lever Ferrule, Gearshift Cap Seat, Grommets, Glass Frame Silencer Strip, Gas Tank Shield Washer, Garnish Molding Spacer } NT
Handle Bar Grips—PNT
Head Lamp Rim—PNT
Heat Control Diaphragm—?
Hook, Rear Seat Pack—?
Hose
  Brake Bleeder Hose, Fuel Line, Generator Couplings, Hot Water Heater Hose, Hydraulic Brake Hose, Pump Hose (Cloth Inserted), Radiator Hose, Vacuum Brake Hose, Windshield Wiper Hose, Automobile Heater } NT if in bulk lengths; T if cut to usable length and size.
  Radiator—3 ft. lengths—NT
Ignition Switch and Wire Cover—T
Ignition Wire Ring—NT
Insulators—Industrial—NT
Jiffy Solution—NT
Liner, Radiator to Fender—NT
Mallets, Rubber—NT
Mats
  Deck, Floor Board, Running Board, Sill, Toe Board, Matting, Running Board } T if cut to size and length; NT if in bulk lengths.
  Packing Asbestos Sheet—NT
Mats—Automobile Floor (Universal and Semi-Universal type)—NT if needs cutting and fitting to fit any car; otherwise T.
Muffler Support Bracket Insulator—NT
Pads
  Front Fender—NT
  Step Plate—T
  Brake Pedal—T
  Clutch Pedal—T
  Accelerator Pedal—T
  Door Handle—?
  Pillar—?
  Lamp Bracket—?
  Luggage Rack—?
  Radiator (or Cushion)—NT
  Spare Tire Well—NT
  Pedal Slot—T
  Starter Pedal—T
  Steering Post—T
  Tire Well—NT
Panel Filler, Instrument—NT
Patches
  Flannel Back Tire, Plaster Cord, Seal-the-Cut, Pulled Cord, Crossed Cord (Uncured) } Vulcanization not required. } NT
Pillar Fillers—?
Piston Rod Guard—?
Pocket Tension Straps—NT
Propeller Shaft Center Bearing—NT
Protector, Lamp Plug—NT
Protector, Brake Cable—NT
Radiator Support Insulator—NT
Rear Fender Step Plate (or Tread Plates)—T if to size; NT if in bulk
Rear Fender Flaps—T
Repair Gum—NT
Rims and Rim Parts—NT for time being X
Rim Strips—NT for time being X
Rim Liners—NT for time being X
Rubber Floor Matting—Corrugated } T if cut to size; NT in bulk.
Rubber Lacquer—NT
Rubber Bus Fenders—T
Rubber Sun Visors—T
Rubber Solvent—NT
Running Board Assemblies (Rubber-covered Metal)—T
Shock Insulators, Shackle Tension Pieces } T if made to size; NT if in bulk.
Shims—NT
Shoes—Sport—? Each shoe requires separate ruling
  Side Tire Carrier Arm Hole Cover, Side Tire Carrier Clamp Cushion, Spring Silent Block Bushing (or Insert), Spring Shackle Stop, Spring Shock Insulators, Spring Shackle Blocks, Starter Terminal Cover, Steering Gear Hole Plug, Steering Gear Housing Gasket, Steering Post Collar } NT
Spark Plugs—T
Spacers
  Instrument Board Cowl Bar, Instrument Panel, Door Molding } T if cut to length and size; NT if in bulk.
Sponge Rubber
  Arm Rests, Cowl Ventilator Gaskets, Header Rubber, Pedal Weatherpads, Weatherstrip } — ?
Soapstone—NT
Strips, Sash Filler—NT
Tire and Tube Repair Outfits—NT
Tires—Juvenile—when not cut to length—NT
Tire Covers—T (if given away by manufacturers NT) X
Tire Plugs—NT X
Tire Dough—NT X
Tire Repair Fabrics—NT X
Tire Paint and Top Dressing—NT
Tire Changer—High Speed—NT
Tubing—Misc.—NT unless cut to length
Tubing
  Drain Tubing, Windlace, Wire Insulator } NT unless cut to length
Tool Box Cover—NT
Top Dressing—NT
Tractor Block—NT
Transmission Dampner Plate—T
Transmission Gear Shift Silencer—T
Valve Pads (Vulcanizing not required) NT X
Valve Hardware (Pressure gages) NT X
Valve Patches—NT X
Vibration Dampner Plate (Rubber and metal and all rubber) T
Washer, Gasoline Tank Filler Hole—NT
Washers
  Washers Hard Rubber, Insulators—Hard Rubber, Cowl Molding, Motor Support Foot Hold Insulator, Miscellaneous, Spring Silent Block Thrust, Sponge, Swing Arm, Tie Rod Spring Cover } NT
Transmission Dampner Brake Drum Hub Seal
Weatherstrip
  Door Sash Bottom, Miscellaneous Extruded Shapes, Velvet Covered Strip } T if cut to size; otherwise NT.
Windlace—T if cut to size; otherwise NT
Window Wiper Blades—NT unless in metal frame; then T
Window Corner Fillers—NT
Windshield Wiper Tubing—T if cut to size; otherwise NT
Windshield—?
Wheels and Wheel Parts—T but possibly X
Windshield Side Garnish Spacer—?
Windshield Wiper Rubber—T if cut to size; otherwise NT
Wringer Rolls—NT

Laboratory Tire Testing

Drop Test and Pulley Test Machines for Studying Construction and Durability in Service of "Doughnut" Tires

PHYSICAL testing of finished product is conducted in the laboratories of every tire manufacturer to correct defects in material, design, and construction in the development of new types and to check quality of his own and his competitors' product. Two pieces of tire testing equipment installed for testing tires are here pictured and described as used in the laboratories of one of the first companies[1] to make "doughnut" tires.

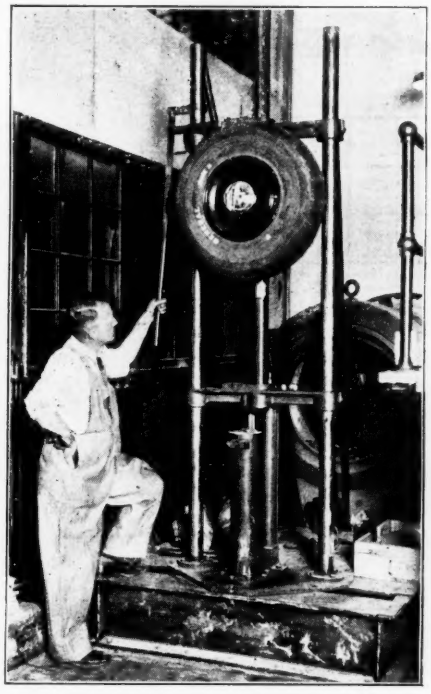


Fig. 1. "Bruise-Break" Tire Tester

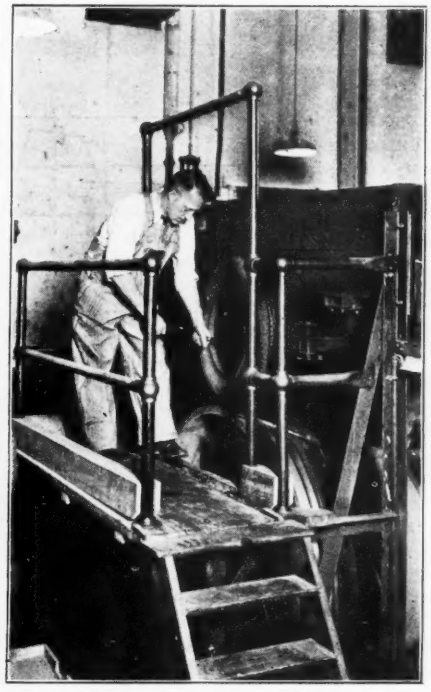


Fig. 2. Pulley-Wheel Testing Machine

The tire testing laboratory of this company is kept at a constant temperature of about 90° F. so that the tires may be tested under conditions that approximate a hot summer day because heat is one of the worst enemies of rubber. In this room many brand-new tires are tested daily.

Tires in service, especially on unimproved roads, receive many bruises from sharp rocks, hard ruts, and other unevennesses in the road surface. Eventually these bruises, if severe enough, seriously injure the fabric.

What happens to the tire, when it is bruised badly, is demonstrated on a "bruise-break" testing machine where the injury that a tire undergoes on the road is exaggerated many times. This device somewhat resembles a pile-driver by which the tire is lifted to a height and then dropped repeatedly on an anvil or a plunger. The tire is revolved, as it is dropped, so that it will strike the anvil, at many points on the tire. Probably 50 bruises are inflicted on the carcass of the tire in this way.

Pictured in Figure 1 is a streamline Jumbo tire about to be dropped on the anvil shown directly below it. Varying types of anvils or plungers are used, and the tires are tested at different air pressures to inflict different kinds of bruises. The height of the drop is also varied. Care is taken that the tire bruise is caused entirely by the anvil as the tire drops on it. The tire is not permitted to fall so hard that the blow pinches the tire between the anvil and the rim of the wheel on which the tire is mounted.

The effect upon a front tire of 10,000 to 15,000 miles of road service is determined by the "pulley-wheel" test. In making this test 2 tires are mounted, one on either end of an ordinary truck or passenger car axle. On this axle rests a heavy wooden box containing enough pig iron to overload the tires. The axle and the loaded box are placed on the pulley-wheel testing machine so that each tire will roll on a large pulley-wheel. On each of these wheels are 2 diagonal cleats projecting about an inch above the surface of the wheel. When the machine is operated, the pulley-wheels revolve, setting the tires in motion as on the highway. The tires pass over the projecting cleats in the wheel surface with each revolution of the pulley-wheel, thus approximating wear on uneven roads.

The set-up for this test is pictured in Figure 2 in which an operator is shown adjusting a test tire to the axle of the spring hung weight box. Near the man's left foot may be seen the rim of the pulley-wheel, and crossing it diagonally is a cleat designed to bump the tire as it revolves. The test is conducted continuously. Great heat is generated in the tires, and after about 2 weeks' running a tire has received as much punishment as it would ordinarily in being driven 10,000 to 15,000 miles.

The pulley-wheel test does not give a test of tread wear nor does it approximate the conditions that a rear tire undergoes on the road. No abrasion is involved in this type of test. Rear tires, of course, are subject to abrasion on the road, especially when brakes are applied in stopping or when power is applied in starting. Tire beads cannot be tested adequately with this machine as there are no corners to be turned and it is impossible to approximate the sidesway that comes with turning a moving car at a corner.

[1]General Tire & Rubber Co., Akron, O.

These laboratory tests merely supplement the actual testing of the tires on the roads where under real driving conditions the best deductions can be made for the final decisions on tire merits.

However time can be saved by the laboratory tests as conditions can be exaggerated so that a tire failure can be reached in a couple of weeks without speeding the tests so fast that artificial conditions are caused.

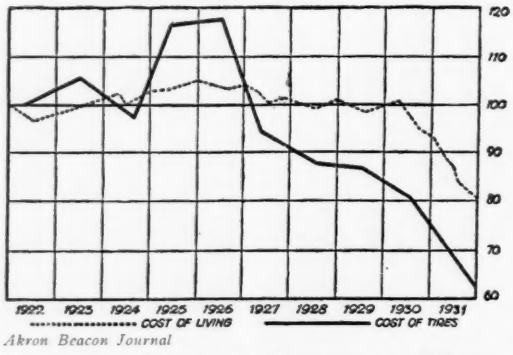
With the machines described tires often are tested against each other, competitive tires of the same size and grade being mounted on either wheel of the pulley-testing machine to determine their relative quality. Tests are always made against certain standards which are insisted upon. Unless these standards are met, more development work must be done. Tires are changed each day so that results can be observed as the tests continue.

Finally road tests are made on cars in the test fleet which is constantly on the road day and night and includes passenger cars of various types and trucks, both light and heavy.

Tire Dollar Goes Farther

SIXTY-THREE cents buys more value in automobile tires today than a dollar would have bought 10 years ago. It would take 83 cents, however, to buy today the same value in all other commodities that enter into the cost of living that a dollar would have purchased in 1922.

The accompanying graph, based on data compiled by the National Industrial Conference board and the Rubber Manufacturers' Association, figures the living costs in 1922 as 100. They rose above that mark in 1923, and stayed above until late in 1929. Since then they have been dropping until the average today is approximately 83.1 of what it was 10 years ago.



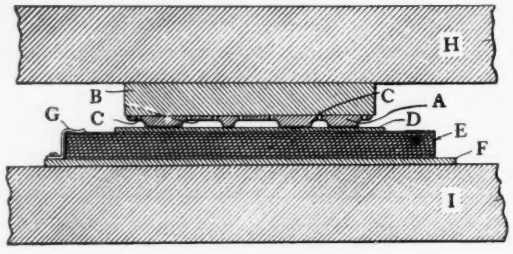
Akron Beacon Journal

Comparison of Costs of Living and Cost of Tires

The decline in tire costs has been much greater. The cost of the average tire rose in 1923, dropped slightly in 1924, and then in 1924 and 1926 rose to more than 18% above the 1922 figure. In 1927 they started on a downturn that has continued ever since. Today's tire costs only three-fifths as much as the far less efficient tire of 1922.

Rubber Faced Printing Plates

BY a recently invented process[1] rubber is applied to the impression surface of metal printing plates, for use with water soluble inks. This end is accomplished without loss of sharpness of definition and accuracy of the usual metal plates with which oil soluble inks are commonly used. The process is applicable to original zinc or copper etchings, electrotypes, linoleum, or other composition plates.



Facing a Printing Plate with Rubber

Rubber facings adapted for this process may have a thickness of 0.006 to 0.025-inch. Heavier facings may be used where a fine result is not essential such as in the preparation of linoleum or composition plates to be employed for printing on boxes, etc. The process of applying the facing to the plate is done mechanically to insure uniformly accurate results.

The assembly employed in facing a metal printing plate is indicated in the illustration where *A* is a printing plate mounted on the usual base *B* of wood or metal to which a rubber facing is to be applied. Plate *A* is formed with numerous vents *C,C,* communicating with its depressions for the purpose of releasing the air trapped when the sheet rubber is pressed tightly against the impression surface of the plate. The surface of the plate is thoroughly cleaned, and, when dry, a light coating of an asphaltum base adhesive is applied to the impression surface.

The rubber facing comprises a thin sheet of uncured rubber *D* that has been previously laid over a resilient cushion *E*, which rests upon a smooth metal plate *F* held in place by a clamp *G* over one edge.

The entire assembly is placed between pressure blocks *H* and *I* of a press which attaches the uncured sheet rubber *D* firmly to the impression surface of plate *A*. The intervening adhesive coat serves to unite the facing inseparably to the plate. The block *B*, which bears against the plate, should be of such material as to facilitate the escape of the trapped air released through the vents *C*. The rubber facing is trimmed around its edges and then cold cured by pouring over it a solution of sulphur chloride in carbon tetrachloride.

A printing plate faced with rubber as described retains all of its original sharpness of definition and the impression surface will be uniform. The plate will take any of the commonly used oil, alcohol, or water soluble printing inks. When water color inks are used, little pressure is needed to transfer the ink from the plate to the paper. Because of the light pressure required, the plate is not worn, even after many thousands of impressions. Its endurance through long service will make unnecessary frequent renewal.

[1] U. S. Patent No. 1,849,598, Mar. 15, 1932

Latex Compounding Machinery

Colloidal Ingredients—Laboratory and Factory Equipment—Colloid Mills—Pebble Mills—Churns and Batch Mixers

Webster Norris

RUBBER particles in latex are of colloidal size; therefore colloidally fine ingredients are most suitable to employ in compounding latex. In practice, however, latex is frequently compounded with powders of 300-mesh fineness the same as used for mill mixing dry rubber compounds. Nevertheless patent literature discloses the importance of colloidal ingredients for compounding latex, designed for many processes and products. Such materials are appearing commercially, the preparation of which can be done as a plant operation by installing the necessary simple machinery for grinding and mixing. The machines needed are standard in those branches of manufacture that require the utmost particle fineness for uniformity of product. Examples are ready mixed paints, printing inks, ceramic ware, etc.

Whereas the older types of rubber working machinery are massive, heavy, and consume much power for operation, those used for latex rubber working are quite the opposite, being compact, light, and consuming much less power for operation. These radical differences constitute important technical and economic advantages in favor of latex over dry rubber working where latex processes are applicable to production. The machinery for latex compounding involves nothing novel in principle although colloid mills and pebble mills are new to the rubber worker.

Colloid Mills

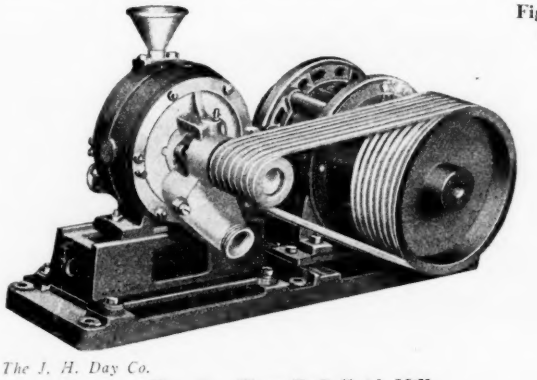
A very practical machine for disintegrating and emulsifying solids and liquids is the colloid mill. Its operating principle is a hydraulic shearing action by which it disperses the material adhering to the rotor and the stator without any grinding, but by rubbing between 2 surfaces. The high speed of the rotor and passage of the material between very fine clearances causes lamination and shearing of the particles and results in complete and speedy dispersion of the material. Such rapid and continuous work requires high peripheral speed of the rotor and water cooling of these parts. Both vertical and horizontal mills are pictured to show their external appearance. Special merit is claimed for each form, and in any case selection should be based on experiment with the problem in hand.

The Premier mill, Figure 1, is vertical, permitting gravity flow through the machine and uniform treatment of material leaving no tailings. Its rotor and stator mate with smooth surfaces very much like an automobile valve so that any wear is taken up by the rotor seating itself into the stator. The largest mill does not require more floor room than a space 3 feet in diameter. The purpose of these mills is to make fine particles finer and not to grind coarse material to commercial sizes such as 200- or 300-mesh. All of the work done by the mill is effected by the force of hydraulic shear produced within the confines of a very thin film of liquid in which the rotor is traveling at the high speed necessary to impel the material between the rotor and stator.

Premier Mill Corp.

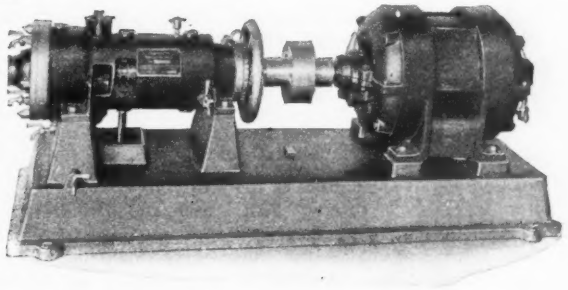
Fig. 1. Premier Colloid Mill

The Day-Hurrell colloid mill is horizontal and of 2 types, driven either by direct connected motor or by tex-rope drive as in the model pictured in Figure 2. One of the features of these mills is standardization of parts to facilitate replacements when necessary. In the dispersion of most materials it is desirable that they be of size sufficient to pass through an 80-mesh screen before treatment in the colloid mill, in order to



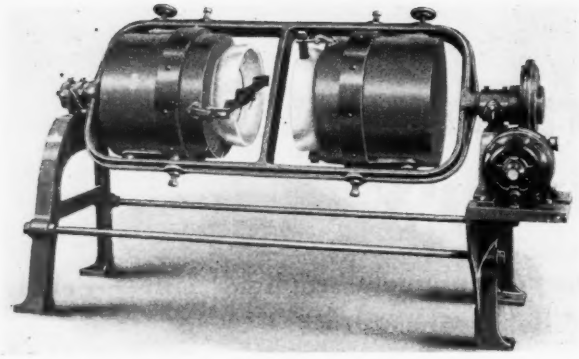
The J. H. Day Co.

Fig. 2. Hurrell Colloid Mill



Chemicolloid Laboratories, Inc.

Fig. 3. Charlotte Colloid Mill

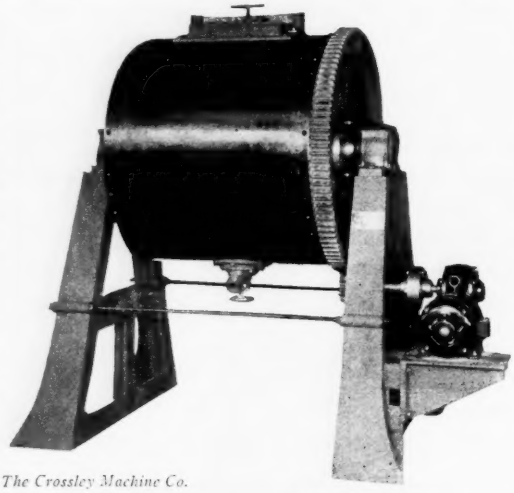


Paul O. Abbé, Inc.

Fig. 4. Laboratory Pebble Mill

obtain the maximum effect of the shearing action. There are exceptions, however, to this rule in the case of gelatinous or pulpy stocks when particles of a much larger size may be treated.

The Charlotte colloid mill is horizontal with motor direct connected as pictured in Figure 3. The feature that differentiates this from all other colloid mills is that its rotor and stator are both grooved. Because of this peculiarity the mill does not depend entirely upon hydraulic shear for its action, but employs impact action as well. Thus within the grooves whirling currents of the material are set up, thereby the products being processed are subjected to terrific beating and chopping action and rapidly dispersed. The clearance between the rotor and the stator is regulated by a calibrated adjustment whereby the clearance can be set as desired down to 0.0005-inch. The 5 sizes of this particular mill will give a production range from 5 to 5,000 gallons per hour.



The Crossley Machine Co.

Fig. 5. Commercial Pebble Mill

Pebble Mills

Grinding and mixing materials in dough like form preparatory to compounding in latex is often done in pebble and ball mills as substitutes for colloid mills. The method is pronounced satisfactory for making cements, for example. The pebble mill is an old and well-known simple device in which grinding and mixing is effected by the movement of balls through a mass of material contained in a revolving barrel.

Such mills vary greatly in size. Experimental pebble mills for preparing laboratory batches consist of one or more porcelain jars arranged to be rotated by power as in Figure 4. Into the jars that are nearly half filled with flint pebbles the material is placed with sufficient water to form a thin paste. The intervals between the pebbles are thus occupied. The movement of the pebbles intimately mixes and grinds the charge as the mill revolves.

For large scale mixing, ball mills are made of any capacity required. Figures 5 and 6 picture 2 motor driven mills of different makes for commercial production of cements. These mills operate in the same way as the smaller sizes used for laboratory or small scale production and are charged with larger pebbles or balls for grinding.

In view of the possibilities of compounded latex in the rubber industry it would seem advisable for rubber factory laboratories to include a small ball mill in their equipment. Such mills are useful for dry grinding and mixing ingredients to extreme and uniform fineness for compounding special dry rubber stocks as well as for latex compounds and wet grinding.

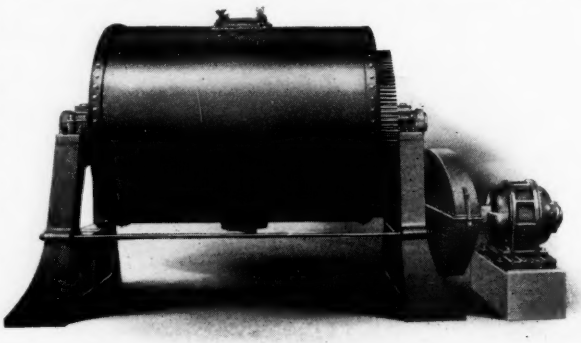
The use of flint pebbles in preference to balls is recommended for doing the work. The pebbles are much less expensive, and of still more advantage is the fact that they will grind better. The ball, being round, has only a one point contact as it rolls through the mass; whereas the pebble with its irregular shape generally has one flat surface which rubs against another while rolling, therefore giving greater contact. It is also heavier; this condition means a better grinding action.

In the past Danish beach pebbles were acknowledged to be superior; but as this supply is being exhausted, the imported flint pebbles are picked up along the coast of France. Domestic pebbles are of softer rock than the imported flint pebbles and wear away much faster than the latter. Local pebbles are usually from crystalline rock; while the European pebble is of amorphous material.

Churns

The common vertical form of churn with agitator built for making naphtha solutions of rubber is equally well suited for mixing compounding powders and pastes into latex and for storage of such mixings for further processing. A group of cement churns is pictured in Figure 7. These are mounted upon a low timber support. The tanks are provided with covers. The agitator shafts are fitted with mixing blades, and side blades are riveted to the side wall of the churn. The agitator shaft is surmounted by a large bevel gear operated by a corresponding pinion shaft that may be extended to transmit power to the entire group of churns, any one of which may be thrown into or out of action by hand-operated clutches on the connecting shaft. Each churn is provided with a quick opening gate valve for free discharge of its liquid contents.

Another form of mixing churn, not illustrated, is known as a pony mixer. It is an independent belt driven machine designed to revolve plain mixing tanks for different batches. Agitation of the contents is done by a group of geared vertical blades. Cover and blades are attached and



Paul O. Abbé, Inc.

Fig. 6. Commercial Pebble Mill

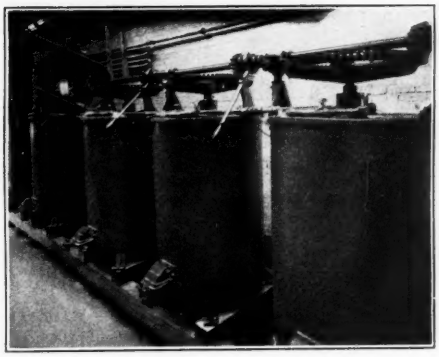
arranged to be raised or lowered together to permit changing tanks and mixing.

Batch Mixers

Batch mixers are machines designed for kneading materials into batches of soft dough-like consistency. Two types are illustrated. The enclosed type, Figure 8, is a tilting dough mixer of the sort used in the baking industry. It is essentially a tiltable box within which a pair of special-form blades revolve in a way that effects mixing by cutting and folding the material upon itself, keeping it meantime in rotary motion. The batch thus produced may be thickened to any desired consistency by powders or fibers in preparation for application as a spread coating or otherwise.

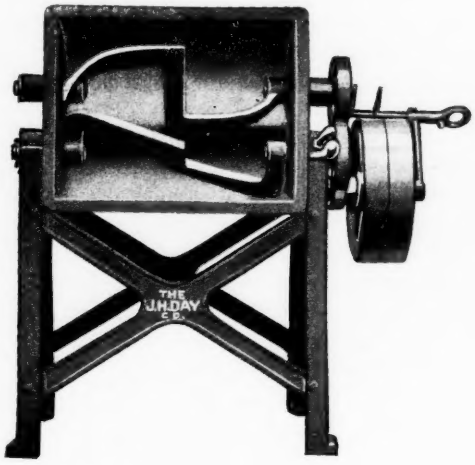
An effective batch mixer of open type is illustrated in Figure 9. The mixing system of this machine consists of a pan rotating in opposite direction to a mixing star. The speed of the pan is 12, and that of the star 60 r.p.m. The star has 3 flexible mixing arms of manganese cast steel blades and is fitted with 1 or 2 rollers should the composition of the batch necessitate a kneading action in addition to intensive mixing. These rollers serve to break dry or wet nodules without crushing, and intensify the rubbing and kneading action. The mixed batch is discharged from the machine through a circular central opening in the bottom of the pan.

The machinery here shown is well adapted for preparing ingredients and mixing them in latex to form perfectly blended compounds for further processing. In this work the machinery herein illustrated and described, presents marked contrasts to the usual rubber mills in initial cost, power, and labor required, simplicity of operation, and uniformity of product.



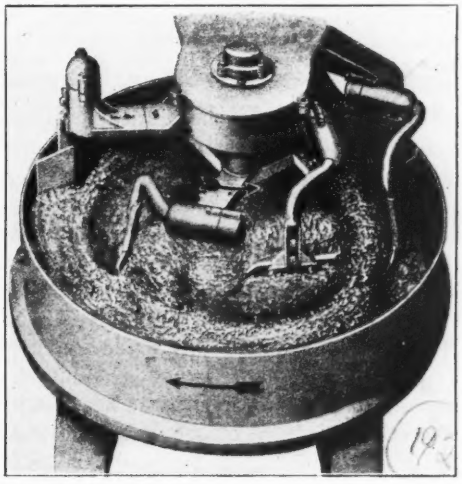
American Tool & Machine Co.

Fig. 7. Mixing Churns



The J. H. Day Co.

Fig. 8. Enclosed Dough Mixer



Lancaster Iron Works, Inc.

Fig. 9. Open Dough Mixer

Back to First Principles

Advocating the Adoption of Forestry Methods in Rubber Planting

THE lively and widespread interest being taken in the application of latex in rubber manufacture and in many other industries is evidence of the return to first principles in not only the use of crude rubber but also in the cultivation of the *Hevea brasiliensis* tree, now numbering several million on far eastern plantations. The great majority of European growers have virtually coddled it as an orchard tree; native growers have proved that they can supply more rubber per acre and at a lower cost by regarding the Hevea as a forest product and treating it in a quite irrational manner as compared with European culture.

The few European concerns that have become convinced that forestry methods afford the most feasible means for combating the production and merchandising practices of the natives give much credit for advocating the return to more primitive ways of raising rubber to Dr. H. N. Whitford, of the Rubber Manufacturers Association of America. The doctor, an expert in forestry, has made a long, exhaustive study of rubber growing and is not only satisfied that forest methods can be readily substituted for the orchard system, but that in view of the fact that rubber is likely long to remain cheap, such methods must be adopted in self defense by Europeans if they would reduce their costs so low as to discourage the natives from glutting the market with cheap rubber.

EDITORIALS

We Are on the Way Up

EVIDENTLY the rubber business has sustained more dents than general depression. One large concern's 1931 report shows 4 times the net profit of 1930, even on somewhat reduced gross income; and another reports neither bonds nor bank loans, a comfortable cash balance, and assets 30 times the current liabilities, none of which is past due. Meanwhile numerous others have been ironing out the dents, putting their houses in order, and fitting themselves for sharing the large and profitable business inevitable for the rubber industry in the near future.

Rubber Trade's Counterbalance

INASMUCH as in the administration of business and political affairs anything savoring of dictatorship has ever been repugnant to Americans, it is not surprising that leaders of the rubber industry are not unanimous in favoring a plan of having its chief operations controlled by one arbiter who, no matter how wise, just, and worthy, might be unfairly deemed a "czar." While those most familiar with the trade's troubles have conceded the need of a powerful influence that would eliminate gross abuses and stabilize business, it has been difficult to get the foremost factors in the industry to agree as to which was preferable, the choice of one or a body to function virtually as an umpire.

But the die has been cast. A committee of 5 prominent New York and Cleveland bankers has been appointed to consider the major problems of the tire industry. It has been determined that the industry can be regulated in a way which suggests neither Soviet nor Fascist absolutism and which should be more efficient than either, even permitting a most reasonable range of individualistic enterprise.

Certainly this super-committee of 5 which will undertake to solve the more grievous problems of the rubber industry is one of the strongest that could have been selected. One feature that shou'd especially warrant their choice is the fact that, having so much at stake in common and being in a detached, non-competitive position, their decisions should be most impartial in all matters submitted for their advice or arbitrament.

The trade's well-wishers will be glad to cooperate with the new council in its efforts to put the industry on as sound and as continuously profitable a basis as the most astutely managed here or abroad.

Old-Time Courage Needed

WE ARE reminded by economic experts that in the depression through which the country has been passing things are not so bad as we have been led to believe. The enormous physical assets are still unimpaired and even in prime condition for serving rapid reconstruction; our needs—those of 123,000,000 people—are even greater than ever; and we have learned the bitter lesson that there is no greater folly than trying to get something for nothing; that no community can permanently enrich itself by overproduction or by putting fictitious prices on credits, commodities, and securities. We have been scaring ourselves to a large extent into a panic, and allowing ourselves to be persuaded that we cannot apply again the remedies for industrial ills that never failed us in the past.

We really have much for which to be thankful in the fact that the nation's resources are not only intact but greater than ever; the general election that used to be an anxiety will bother business but little, if at all; indeed, our chief need is unitedly to sustain the national credit; while our main resolve should be to turn a deaf ear to the calamity howlers, use our own best judgment, and plenty of the old time courage and pioneer spirit that always brought America back to prosperity.

ORDINARILY A PRESIDENTIAL ELECTION YEAR BRINGS special anxiety to business because of possibly extensive changes in tariffs and fiscal policy. But this year there appears to be less reason than ever for misgivings in such directions. The tax question has been practically disposed of, differences in party platforms are not really radical, the nominees are "safe and sane," and business in striving to regain normalcy has something more important to engage its attention than mere political disputes.

TIRES ARE IMPORTANT, BUT IT IS NOT THROUGH THEM alone that the American rubber industry can live. Much has been said about diversification of products, particularly about rubber upholstery, but much yet remains to be done. Our British confreres have already made notable progress in this line. One type of cellular rubber cushion is made by pouring whisked rubber latex into molds and then vulcanizing. They are giving much satisfaction on 300 busses and in numerous theatres, with a good chance of filling many other requirements at a cost, it is said, one-third less than that of common coiled spring seats.

What the Rubber Chemists Are Doing

Heat-Resisting Inner Tube Stocks[1]

E. W. Booth[2]

RUBBER chemists and compounders have for many years realized that inner tubes should be compounded to withstand the high temperatures frequently developed in service. This is especially true of tubes for bus and truck tires. Several authorities have claimed that under extreme conditions tubes may reach temperatures as high as 250° or even 260° F. (121° or 126° C.). These temperatures are rather high and are, undoubtedly, seldom reached in actual practice, but it is probable that in ordinary service, temperatures up to 180° or even 200° F. (82° or 87° C.) are reached for short periods of time.

High percentages of zinc oxide compared to the rubber content were employed, and such stocks withstood deterioration due to heat quite satisfactorily when relatively low sulphur ratios, such as from 2.25 to 2.00%, were used. It was known from aging and service tests that reclaimed or off-grade rubber could not be satisfactorily used. The stocks were purposely overcured. Quite high percentages of antimony pentasulphide were successfully employed. However zinc oxide and antimony pentasulphide are too expensive to be used today in the high percentages necessary, when compared to the other fillers.

The use of 2 accelerators of different types in the same stock frequently improved markedly the resistance to deterioration in service. A stock cured with a guanidine accelerator alone gave a brittle stock in service, possessing but little resistance to tear, and when a tube so compounded was punctured, a tear of from 6 to 12 inches (15.2 to 30.4 cm.) or more very often resulted. When used alone, an aldehyde-amine accelerator gave a stock which in service softened and increased in size and often failed because of pinching at the bead or folding back over itself.

A combination of a guanidine and an aldehyde-amine accelerator was successfully used, and such a stock overcame the difficulties resulting from the use of either accelerator when employed alone. The use of an antioxidant materially lengthened the period of service of bus and truck inner tubes. The practice of curing on circular mandrels and later of curing in a watch-case heater also further improved these tubes.

During the past 5 years or more the tendency has been toward the use of smaller diameter and wider cross-section tires. Braking efficiency has been increased, non-skid tendencies have been improved, and the tires of today give 2 to 3 times the mileage in service that the tires of former years gave. Tread stocks of today are much stiffer or harder. These changes have resulted in an increase in the quantity of heat generated in the tire which is transmitted to the inner tube, and the chemist and compounder are back where they were a few years ago. Consequently the inner tubes in bus and truck tires too frequently are not giving the service the manufacturer or the user would like them to give.

To develop heat-resisting inner tube stocks a method of testing called air-bomb aging has been devised. Tests showed that low sulphur, 1 to 1.25%, high acceleration, 2% or more based on the rubber content, relatively high percentages of antioxidant, and relatively high volume loading, 20 to 25% based on the rubber content, were necessary to obtain a stock which would meet the requirements imposed by the air-bomb aging test.

Test for Heat-Resisting Qualities

The oxygen-bomb and Geer oven aging tests do not give the information necessary to compare inner tube stocks of this kind in the manner desired. Therefore to enable the compounder to investigate the heat-resisting qualities of a stock, a special procedure was required. The writer does not claim to be the originator of this testing method. In the method to be described, an air bomb similar to that used in oxygen-bomb testing is used. The stocks to be tested are milled and cured in the regular way, and dumb-bell strips are prepared from the cured stock as for use in the Scott testing machine. Two strips from each stock are placed in a rack, and in the procedure followed in the experiments described, were elongated 50%. This rack is placed inside the bomb, which is then closed and placed in a laboratory Williams open steam heater which is jacketed.

As determined by experiment, the temperature inside the bomb is about 10° F. (5.5° C.) less than the temperature inside the heater, and therefore a 10° F. higher temperature is employed in the heater. There is a lag of about 20 to 30 minutes between the times the heater and the bomb get up to temperature. The air pressure inside the bomb increases as the temperature increases; therefore in practice air is not put into the bomb until the temperature has been brought up to the required point. Then air is forced into the bomb and retained by closing a valve located between the air supply and the pressure gage. A recording thermometer records the temperature in the heater, and a pressure gage records the air pressure during the test. Standard practice in this laboratory is to employ 100 pounds' air pressure at 250° F. (121° C.) over a period of from 8 to 18 hours with the stock under an elongation of 50%.

Preliminary tests before adopting these standards showed that the 8-hour age tests eliminated a great many stocks, the 12-hour age tests still more, and that those stocks which after 18 hours' aging had lost only 25 to 40% of their original tensile strength would be quite satisfactory for longer aging periods. A few tests were made with higher and lower air pressures than 100 pounds, showing that as the air pressure was increased, the period of the test could be shortened, but the difference in time between 75 and 150 pounds' air pressure was only 2 to 3 hours. Tests before adopting 250° F. (121° C.) as standard temperature showed that increasing the temperature quite rapidly shortened the time required for deterioration of the stocks. This temperature, 250° F. (121° C.), was chosen as standard because it was sufficiently high to eliminate moisture, permitted the use of steam as the means of obtaining temperature, and was high enough to be controlled during a test.

Conclusions

A large number of laboratory tests showed that to resist deterioration due to heat in an inner tube stock successfully, the following points should be observed:

1. Sulphur ratios should be very low, 1% on the rubber content is sufficient for most stocks; some will require 1.2%. This is true provided no sulphur-producing material is present.

2. When P33 Black or a similar soft black is used, 20 to 25 volumes are necessary. In the case of zinc oxide, blanc fixe, barytes, and the like, lower volumes will be necessary to obtain satisfactory resistance to tear.

3. The stocks should not be markedly overcured, especially if the cure is carried out at 50 pounds' steam pressure (298° F.)

[1] Presented before the meeting of the Division of Rubber Chemistry, A. C. S., held at Detroit, Mich., Feb. 25 and 26, 1932. *Ind. Eng. Chem.*, May, 1932, pp. 555-59.

[2] The Rubber Service Laboratories Co., Nitro, W. Va.

practice with stocks of higher sulphur ratio.

4. The accelerator chosen must be or above. This is the opposite of former strong enough to combine practically all of the sulphur present, and yet should not be too scorchy to handle safely in the plant.

5. Tests showed that the use of 2% of a good antioxidant was justified. 1% gave good results, but especially when agings longer than 18 hours were carried out the stocks containing 2% were markedly superior.

6. Zinc oxide, blanc fixe, barytes, or precipitated whiting can be successfully employed in stocks of this type. The modulus and tensile figures are lower than when P33 Black is used, but the losses in tensile strength due to air-bomb aging are comparable to P33 Black, and these fillers would permit the manufacture of colored tubes such as red, green, and yellow.

7. Heat-resisting inner tube stocks of this type compared to the ordinary tread, carcass, and tube stocks will necessarily be more scorchy, and care must be taken to cool the stocks properly in processing through the factory.

The possibility of the migration of sulphur from the carcass stocks to the inner tube, or the migration of accelerator from the inner tube stock to the carcass stock must be taken into account. Today tire manufacturers are using as low as 2% sulphur in the carcass stocks of bus and truck tires. These low sulphur ratios in the carcass stock tend to prevent the migration of sulphur. The usual Geer oven migration tests were carried out on stocks containing Ureka C as accelerator. The Geer oven was maintained at 93.3° C. (200° F.) for 14-day periods, and in no case did these tests show appreciable migration of sulphur or accelerator. Controls were run during the migration tests and alone.

Rubberizing Balloon Fabrics[1]

In France government specifications for rubberized balloon fabrics require, or did so until recently, that the cold cure method with chloride of sulphur be adopted. The fabric generally is supplied by the government, cotton usually being employed, sometimes silk, and less frequently linen. For the cold cure pure para rubber is specified, and under certain conditions suitable plantation grades, which have to undergo prolonged milling to reach the desired stage of plasticity while there is no addition of other materials.

The author points out that whereas formerly there was ample reason for preferring the cold cure method since the fabrics so prepared were much less permeable to hydrogen than those vulcanized hot, this is no longer the case since the use of accelerators and antitoxidants has so greatly improved the hot cure method. Besides fabrics cured hot are much more resistant to the extremes of temperature of northern latitudes and the tropics.

[1]J. Panem, *Rev. gén. caoutchouc*, Sept., 1931, pp. 37-38.

Rubber Bibliography

RUBBER LATEX. V. N. Morris and H. W. Greenup, *Ind. Eng. Chem.*, July, 1932, pp. 755-70.

COMPRESSION STRESS-STRAIN OF RUBBER. J. H. Sheppard and W. J. Clapson, *Ind. Eng. Chem.*, July, 1932, pp. 782-90.

OLD AND NEW METHODS OF VULCANIZING CUT SHEET. P. Bourgois, *Caoutchouc & gutta-percha*, 1932, 29, p. 15981. English translation, *Rubber Age (London)*, July, 1932, pp. 134-35.

USES OF RUBBER IN MACHINE DESIGN. *India Rubber J.*, July 2, 1932, pp. 20-23.

SOME ASPECTS OF TIRE FABRIC IMPREGNATION. F. A. Middleton, *India Rubber J.*, June 18, 1932, pp. 743-45.

MOLDED BRAKE LININGS. B. W. Wetherbee, *Rubber Age (N. Y.)*, July 10, 1932, pp. 273-74.

ZINC OXIDE. Part III. B. R. Silver, *Rubber Age (N. Y.)*, July 10, 1932, pp. 275-76.

RUBBER CONTENT OF PHILIPPINE PLANTS. I. Ficus. J. Maranon and P. Cabato, *Philippine J. Sci.*, 47, 525-33 (1932).

STRUCTURE OF RUBBER AND OTHER ELASTIC COLLOIDS. G. S. Whitby, *J. Phys. Chem.*, 36, 198-214 (1932).

METHOD OF CALCULATING COMBINED SULPHUR IN CABLE INSULATING RUBBERS AND ITS APPLICATION TO THE ESTIMATION OF RUBBER HYDROCARBON CONTAINED THEREIN. S. Minatoya and S. Ooki, *Electro-Tech. Lab. (Tokyo, Japan)*, Circ. No. 86, 1-9 (1932).

HOT AIR VULCANIZATION. P. Walter, *Chemie & industrie*, 27, 513-27 (1932).

RECENT DEVELOPMENTS IN THE RUBBER INDUSTRY. G. Oenslager, *J. Chem. Education*, 9, 975-99 (1932).

RUBBER SOLUTIONS. P. Stamberger, *Rev. gén. caoutchouc*, 8, 75, 176-78 (1931).

ACTION OF TETRALIN ON RUBBER PACKING IN NAPHTHALENE GAS PURIFICATION WASHERS. E. Röhrauer, *Gas Wasserfach*, 75, 169-71 (1932).

USE OF ABRASIVES IN THE RUBBER INDUSTRY. G. L. and H. Barron, *India Rubber J.*, 83, 411-12 (1932).

THERMOCHEMICAL STUDY OF THE VULCANIZATION OF RUBBER. II and III. Heating Curves of Sulphur. K. Hada and T. Nakajima, *J. Rubber Soc. Japan*, 3, 13-17 and 324-31 (1931).

DETERMINATION OF COPPER IN FABRICS AND RUBBERED MATERIALS. F. Kirchhof, *Chem.-Ztg.*, 56, 296-97 (1932).

INFLUENCE OF CONDITIONS OF STORAGE ON THE DETERIORATION OF RUBBER ARTICLES. M. Sagajllo and Z. Otwinowski, *Przemysl Chem.*, 16, 8-20 (1932).

TECHNICAL-CHEMICAL ANALYSIS OF MATERIAL CONTAINING ASPHALT, RUBBER, AND FACTICE AND THE APPLICATION OF THE SO-CALLED EBONITE METHOD IN THIS ANALYSIS. F. C. van Heurn and M. A. Begheyn, *Kautschuk*, June, 1932, pp. 90-91.

VULCANIZATION OF RUBBER FOOTWEAR. J. Talalay, *Kautschuk*, June, 1932, pp. 94-99. (To be continued.)

LIGHT METAL AS CONSTRUCTION MATERIAL IN THE RUBBER GOODS INDUSTRY. R. Heppner, *Kautschuk*, June, 1932, pp. 99-101.

SOME INDUSTRIAL USES OF LATEX. M. F. Chassaing, *Rev. gén. caoutchouc*, May, 1932, pp. 3-5.

NEW USE OF LIQUID LATEX IN THE TEXTILE INDUSTRY—FILASTIC. J. C. Bongrand, *Rev. gén. caoutchouc*, May, 1932, pp. 6-8.

VULCANIZATION OF CONCENTRATED RUBBER SOLUTIONS IN THE PRESENCE OF ULTRA ACCELERATORS. M. A. Bourbon, *Rev. gén. caoutchouc*, May, 1932, pp. 9-13.

SYNTHETIC RUBBER. F. Jacobs, *Rev. gén. caoutchouc*, May, 1932, pp. 19-27. (To be continued.)

TECHNIQUE OF MASTICATION. T. Garner, *Rev. gén. caoutchouc*, May, 1932, pp. 29-31.

ACCELERATORS OF VULCANIZATION. F. Jacobs, *Caoutchouc & gutta-percha*, June 15, 1932, pp. 16014-16. (To be continued.)

BALLOON FABRIC. Patents. R. Ditmar, *Caoutchouc & gutta-percha*, June 15, 1932, pp. 16017-18.

SOME CHARACTERISTICS OF BALATA BELTING. T. W. Fazakerley, *Caoutchouc & gutta-percha*, June 15, 1932, pp. 16018-19.

TRANSPARENT MIXES. *Caoutchouc & gutta-percha*, June 15, 1932, p. 16022.

MICRO-ASBESTOS FOR PLASTIC MASSES (ELECTRODES). E. Belani, *Kunststoffe*, June, 1932, pp. 133-34.

YIELD FIGURES FROM LEGITIMATE SEEDLINGS IN 1930 IN THE SOENGAI PANTJOER EXPERIMENTAL GARDEN. C. Heusser, *Arch. rubbercultuur*, Mar.-Apr., 1932, pp. 101-28. English version, pp. 129-56.

EXPERIMENTAL TAPPING OF HEVEA BUDDINGS. VII. C. Heusser, *Arch. rubbercultuur*, Mar.-Apr., 1932, pp. 157-85. English version, pp. 186-214.

RESULTS OF TESTING HEVEA CLONES IN THE EXPERIMENT GARDEN TJIOMAS I. F. W. Ostendorf, *Arch. rubbercultuur*, Mar.-Apr., 1932, pp. 215-26. English summary, 227-29.

PREPARATION OF RAW RUBBER. B. J. Eaton, *Malayan Agr. J.*, May, 1932, pp. 207-12.

RUBBER DISEASES. A. Sharples, *Malayan Agr. J.*, May, 1932, pp. 223-29.

MALAYAN RUBBER INDUSTRY IN 1931. H. A. Tempany, *Malayan Agr. J.*, May, 1932, pp. 230-36.

MAKING TEST MIXES FOR THE MOST IMPORTANT RUBBER FILLERS. W. Esch, *Gummi-Ztg.*, June 10, 1932, pp. 1229-30.

BUILDING CYCLE TIRES. *Gummi-Ztg.*, June 17, 1932, pp. 1261-62.

MANUFACTURE OF MOLDS FOR MOLDED GOODS. P. Werner, *Gummi-Ztg.*, June 17, 1932, pp. 1262-63.

Flectol A

Flectol A is an antioxidant useful to impart age resistance and good flexing quality to tread stocks. Bomb and oven aging tests show it to be very effective.

Latex Applications

Attachment of Rubber to Metal–Pile Fabric Backing–Gasproofing–Road Surfacing–Latex Adhesive

IN A number of industrial uses rubber must be inseparably attached to metal as, for example, when used as roller covering, tank lining, shock absorbers, engine mountings, etc. One of the more recent methods is by a latex vulcanizable cement of patented[1] composition. This consists of latex with which is mixed a water solution of hemoglobin in such proportions that the mixture will contain 40 parts of hemoglobin and 50 parts latex solids. To these are added 10 parts of a vulcanizing agent including an accelerator.

When dried at a temperature just above that at which the hemoglobin coagulates or sets this cement forms a bonding film, the vulcanization of which may be varied to any desired degree from soft rubber to vulcanite. These bonding films have demonstrated a utility in attaching rubber materials to bases of practically any solid substance except oily or greasy materials such as leather.

A compound of latex and water dispersed coagulated crude or reclaimed rubber is utilized to impregnate the loosely woven backing of pile fabrics for the purpose of reenforcing their structure, anchoring the pile warps, and preventing raveling or shedding of the fabric.[2] Preparation of the coating consists in reenforcing diluted latex by dispersion into it of coagulated rubber which during or prior to the process of dispersion is provided with a protective colloid. Casein, saponin, rosin soap, or soapy vegetable extracts are appropriate as protective colloids to be masticated into the rubber on a mill. Diluted latex may be then added gradually to the plastic rubber with sufficient agitation thoroughly to disperse the rubber in the liquid. Necessary vulcanizers, accelerators, and other ingredients may be added to the mixing.

It is stated that addition of latex to artificial aqueous dispersion promotes coagulation and limits penetration, gives improved aging, smooth spreading, and eliminates tackiness and sensitiveness to temperature changes.

Gold beater's skin, a relatively thin membrane obtained from the viscera of cattle, has been extensively employed as a gas proofing medium in the larger type of air craft. Its initial cost and the laborious process of cementing each individual piece to the fabric by hand labor makes its use prohibitive. An entirely satisfactory substitute consists of a latex compound[3] comprising vulcanized latex, gelatin, and glycerol. This material may be applied to the fabric without the application of heat.

It is extremely impermeable to gas, quite flexible, and retains the latter property at the low temperatures of high altitudes. The use of vulcanized latex prevents the film from being washed off by water and aids in making the gelatin insoluble.

The utilization of latex to improve the properties of oil as a binder for road materials is indicated in a recent patent.[4] It is found that road oil having about the consistency of molasses at normal temperature, when mixed with latex, assumes a rubbery nature. A suitable formula consists of 90% road oil and 10% uncoagulated 38% latex. The bituminous mixtures to which latex is added for its rubbery effect comprise macadam binders, road oils, sludges, asphalts, emulsified asphalt, watered asphalt, and in fact any bituminous matter which might be united in a cold or heated process with uncoagulated latex.

A latex adhesive has been perfected[5] for uniting layers of sheeted materials, granular material, particles of cork, dissimilar materials such as wood and paper, cork and metal, metal and paper, etc.

This adhesive is obtained by adding latex to blood albumen in which water is the vehicle. In a specific example, about 700 gr. of blood albumen are mixed with about 700 gr. of water and allowed to stand over night to cause thorough swelling of the albumen. Following this treatment an additional quantity of water is added to bring the total amount of water added to about 1,300 gr. The mixture is next filtered to remove any solid particles. There is then added about 130 to 200 gr. of ammoniated latex, and mixing is effected to make the product homogeneous.

When the adhesive is to be applied by a spreading device it is found that a suitable consistency will result from mixing 8 lbs. of blood albumen, 15 lbs. of water, and 2 lbs. of latex containing about 30% rubber content.

The primary binding action of the rubber can be utilized to speed up the process of molding. Thus a mass of material may be formed in a mold and retain its shape sufficiently long, when removed, to carry out the final hardening by heating outside the mold. Though the mixtures described will keep indefinitely without decomposition, it is desirable for some purposes to add an antiseptic such as sodium benzoate, carbolic acid, formaldehyde, etc.

An adhesive made in accordance with the method outlined will be almost white and free from the usual dark coloration due to blood albumen. It will be waterproof, non-putrefiable, and will have sufficiently low viscosity for proper manipulation and processing. When subjected to heat, it will quickly coagulate, harden, and set without substantial shrinkage or loss of volume. Other means than heat may be used to set or coagulate the adhesive. For this purpose chemical agents such as acetic or sulphuric acids or any strong electrolyte are used. An important application of this adhesive is for cementing cork disks to the metal seals used for crown sealing bottles. In this work 2 seconds at 200° F. will produce the necessary hardening effect.

[1] U. S. Patent No. 1,852,728, Apr. 5, 1932.
[2] U. S. Patent No. 1,855,387, Apr. 26, 1932.
[3] U. S. Patent Reissue 18,355, Feb. 23, 1932.
[4] U. S. Patent No. 1,861,407, May 31, 1932.
[5] U. S. Patent No. 1,852,532, Apr. 5, 1932.

Lexene Coated Papers

A NEW development in paper manufacture, involving the use of rubber latex in making coated papers for the printing and the lithographing trades, has been announced. The name given to the special latex formula is Lexene. The following claims of interest to printers are made for coated papers containing the new ingredients:

The water content of the paper is more stable and the tendency of the sheet to curl, shrink, or expand is largely overcome, eliminating many pressroom difficulties. A Lexene coated sheet uses less ink, and the ink lays better. Solid blacks, for example, print beautifully soft and even in texture, and experiment has demonstrated that the ink dries more rapidly and offset is greatly reduced. The rubber being continuously flexible, binds the harsher coating ingredients in a soft, pliable coating and greatly increases the folding strength.

The claim for the new paper in the field of lithography is that at last a coated paper has been developed which may be lithographed satisfactorily on both sides. Lexene and its use in the manufacture of coated paper are protected by patents.

The Anode Latex Process

THE Anode process makes a special appeal through its simplicity, and the quality of its product is evidenced in electricians' gloves, which show high tensile strength, chafing resistance, natural aging, etc. This process is also very economical in manufacturing cost, plant investment, floor space, and labor cost. Power consumption is said to be particularly low because of the rapid rate of deposition of 1½ to 2 gr. of dry rubber per ampere minute; but some extra power is needed to make the dry pigments suitable for compounding.

New Goods and Specialties

Rubber for Chickens

SOME chickens have a very bad habit of pecking at one another or picking their toes. To prevent such damage a rubber clip has been designed that covers the entire upper beak of the fowl. The Clip Pick, as it is known, comes in 2 sizes, a small one 1/64-inch thick and a larger one 1/32-inch thick. Kosten & Zuidema, 35 N. Fuller Ave., Grand Rapids, Mich.

Valve Caps in Bulk

VULCANIZERS and repair shops will be interested to know of the new medium weight Schrader valve cap, No. 6,300, built particularly for service work. The cap is bulk packed both in 100 and 250

Packaged Valve Caps

lots. It carries the Schrader guarantee: viz., airtight up to 250 pounds' pressure. A. Schrader's Son, Inc., Brooklyn, N. Y.

Sponge Rubber in Arch Lift

TO PROVIDE greater comfort for shoe wearers a device has been patented in the nature of an arch lift that makes use of rubber. Step-On-It Cushion Arch Lift, as it is known, boasts a cushion insole provided with heel, shank, ball, and forepart of sponge or like soft rubber, with the heel, shank, and ball portions of substantial thickness and with the forepart of less thickness which gradually tapers from near the ball portion to the end of the toe portion. This insole has a thin, flexible backing member, preferably of kid or leather, which is secured to the upper surface of the sponge rubber insole. When worn, the leather side is up next to the foot.

Step-On-It's flexing action is said to be threefold. The arch lift is a shock absorber. It gives flexible support to all the arches by conforming to their shape and need; and it exercises and massages the foot with every step, assuring free circulation, thereby strengthening the entire structure. Orthopedics, Inc., 410 Woolworth Bldg., Providence, R. I.

Rubber Aid for Golfers

AN INCREASING number of devices to help golfers improve their game flood the market; and the advantages of rubber frequently result in the adoption of this material as the most suitable for such purposes. A new all-rubber aid, known as the Rite-Spot, here illustrated, is designed to slip over the end of the club and be placed where the player's left thumb rests when his stick is in correct position. Thus when the golfer grasps his club, he grips it in exactly the right place, with the club head always at the correct angle. The player, consequently, does not have to shift his grip several times to get his club in proper position. The use of this position marker is said also to reduce mental hazard, help overcome hooking and slicing, and be a distinct aid in driving and putting.

Rite-Spot

Rite-Spots are packed in cartons of six, one for each of a set of clubs. Argo Specialty Corp., 816 Empire Bldg., Detroit, Mich.

Rubber Paper Cement

PRACTICALLY everybody uses water soluble adhesives in one way or another for attaching papers. The familiar drawbacks that attend the use of such pasting materials are often more than simple inconveniences. For example, in printers' layouts, frisket work, and art work mountings, etc., it is desirable that the adhesive shall not curl, shrink, stain, or penetrate the paper. Water soluble adhesives are more or less defective in these respects.

Rubber Cement Dispenser

One type of adhesive, however, is free from these shortcomings. It is pure pale crepe rubber dissolved in gasoline to a thin smooth cement. This material is available in screwtop metal containers and collapsible tubes. The stock in cans is transferred for use to a convenient glass dispenser with a special screwtop brush holder, so arranged that the brush can be adjustably immersed in the cement. It is thus kept soft continuously and ready for use.

Papers are joined temporarily by applying a light coating of cement to the mount only. For permanent joinings a coating is applied to both mount and backing. Both surfaces are allowed to become dry before being pressed together. Excess cement extending beyond the edges of the mount may be easily rubbed off with the finger tips without injury to the work. A most convenient cleaner is a closely rolled tape of uncured pale crepe about 2⅛ inches diameter by ¾-inch wide wound upon a cork composition center. This unique arrangement permits one to keep the cleaning surface fresh by simply stripping away the soiled outside of the roll.

Stokes Foot Pan

Hard Rubber Foot Bath

AN ESSENTIAL bit of equipment for gymnasiums, swimming pools, and locker rooms in clubs, schools, and colleges —if they wish to guard their patrons against athlete's foot—is the hard rubber foot bath here illustrated. As it is made of acid resisting material, it can safely be filled with a strong solution of sodium hypochlorite, the recommended wash for protection against the dreaded infection. Jos. Stokes Rubber Co., Trenton, N. J.

Hagen-Layco Golf Grip

THE prayers of those golfers who crave a real tacky grip, one that sticks to the hands like adhesive, are answered at last in the form of the Hagen-Layco grip. It is said that when your hands, be they wet from the rain or perspiration or dry as can be, grasp this soft, pliable surface, they adhere. For the unique construction of this grip consists of spirally coiled scientifically treated leather sunk in a solid cork grip. The latter, rubberized and vulcanized, is firmly secured to the steel shaft. The L. A. Young Golf Co., 6545 St. Antoine, Detroit, Mich.

New Machines and Appliances

Telepoise Conveyer Scales

THE Telepoise conveyer scale is a combined feeder and scale. It is dependable as a unit in any modern rubber plant where it is desired to feed material continuously and know its weight as it is fed.

The problem involved in totalizing the weight of material thus moved by a continuous belt is simply stated: to combine the weight of material on a unit length of belt, with the speed of the belt. To obtain the weight, a suspended type of scale is employed with a frame of suitable construction to permit the belt and load to pass through it over rollers, transferring the weight to weighing levers and through them to a load indicating scale beam. If the beam is employed to indicate the weight only, it will do this work quite accurately; but if, in addition, it is required to perform other work, it ceases to be a scale beam. It is in this particular that a common inherent error has been eliminated by introducing a free scale beam to perform no other function but that of weighing.

In the modern photo-electric integrator with which the Telepoise is equipped the cell, light source, and condensing lenses are attached and become a part of the beam. Provision is made to permit the wall of a cylinder to be revolved between the cell and focused light. The cylinder is revolved at a fixed ratio to the speed of the belt. Slots in the cylinder admit light to the cell; the number of admissions per revolution of the cylinder is controlled by the position of the beam in its vertical movement from no load, where light is not admitted, to full load where all the slots in the surface of the cylinder admit light to the cell. The light admitted causes an amplified current to operate a relay in circuit with an electro-mechanical unit, geared to a dial register at a desired ratio to indicate long, short, or metric tons, pounds, barrels, etc. This photo-electric integrator is shown in the illustration attached to the weighing mechanism. John Chatillon & Sons, 85-99 Cliff St., New York, N. Y.

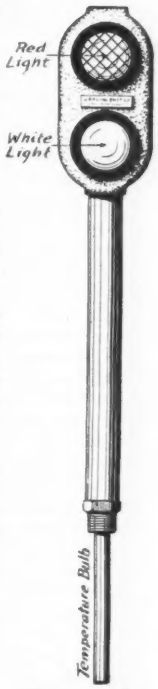
Electrically Heated Oven

QUITE as indispensable as an analytical table is a dependable electrically heated and regulated oven. Several designs are available, of which one only is pictured. This is built of asbestos slate on a steel frame. Three walls are provided. The space between the 2 outer ones is packed with an 85% magnesia asbestos mixture which effectually prevents radiation of the internal heat. The space between the inner walls, used to conduct the heated air upward from the heating units in the base, aids in distributing the hot air uniformly. Heating the oven is effected by standard heating units of chromel wire wound on mica strips. These units are mounted together with the regulator, pilot lamp, and switch on a removable tray or drawer which facilitates their removal for inspection or replacement without disturbing or materially cooling the contents.

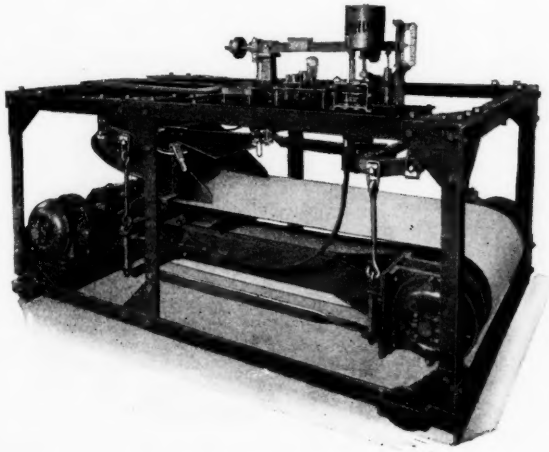
Temperature control of the oven is secured by a patented bimetallic thermo-regulator which can be set at any desired temperature from that of the surrounding air up to the maximum heat capacity of the oven. The precision of action of this thermo-regulator is ¼° C. A pilot lamp on the removable tray of the oven is connected in series with the thermo-regulator, enabling the operator to determine at a glance whether the oven is regulating. These ovens can be operated on either A. C. or D. C. circuits. Central Scientific Co., 460 E. Ohio St., Chicago, Ill.

Electric Temperature Signal

A TEMPERATURE signal device for determining temperature by electric lights, as illustrated, consists of different colored electric lights, actuated by changes in temperature. When the temperature is within the limits for which the instrument is set, a white light will illuminate; when the temperature is above the limits, a red light will illuminate, and when the temperature is below the limits, all lights will be out. Each signal is set for the particular limits desired; for example, 190° and 193° F. A glance at the colored lights will definitely determine whether the temperature is high, low, or within the predetermined limits. If desired, the signaling lights may be located at any distance from the temperature which is being observed. The temperature signals are accurate to within less than one-tenth of one degree F., and can be read at a distance of 200 feet or more. On account of its extreme reliability this instrument is finding many applications. Uehling Instrument Co., Paterson, N. J.

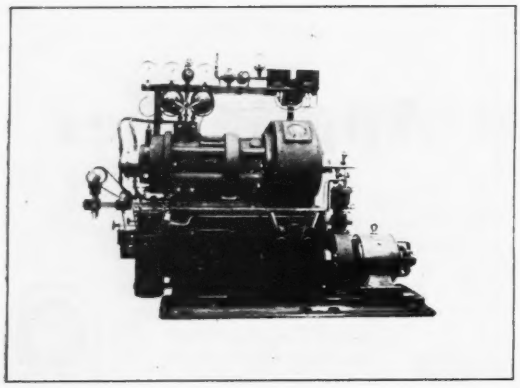


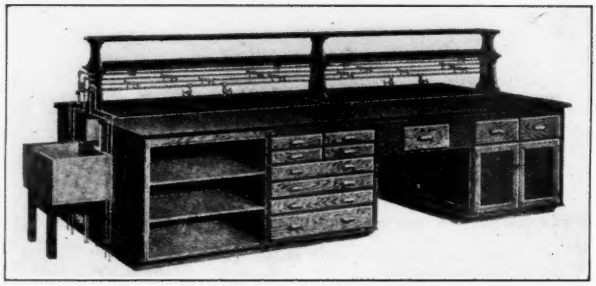
Thermo-Tel Signal



Telepoise Conveyer Scale

The DeKhotinsky Drying Oven





(Above) **Commercial Laboratory Table**

(To Left) **Troester Improved Forcing Machine**

German Tubing Machine

AN IMPROVED tubing machine of German design and manufacture is represented in the illustration. This is a high capacity machine with forcing screw of unusually efficient construction for producing tubes and sleeves as well as for covering wires. Multi-colored goods can also be extruded in a single operation.

The advantages of completely enclosed construction are fully realized in this machine. The unusually good and sensitive temperature regulation equipment provided makes possible reliable production.

The efficiency of this German machine is said to be double that of the ordinary tuber of similar size. This result is due in part to the special design and construction of the feed hopper. This feature is a safety means for feeding the stock automatically. It obviates danger of injury to the operator and insures a perfectly uniform and high grade product. The safety feed construction has been commended in the annual report of the German Association of Chemical Industry. Paul Troester, Hannover-Wüelfel, Germany.

Rubber Plastometer

A SIMPLIFIED plastometer developed in the research laboratories of The B. F. Goodrich Co. for the measurement of the plasticities of rubber compounds is very desirable in rubber works' laboratories for control of crude and compounded rubber, for the study of the plastic properties of vulcanized rubber, and for the determination of scorching rates of unvulcanized compounds.

This plastometer, here illustrated, consists essentially of a mechanism for applying a load to compress a standard test piece mounted upon an anvil. A gage attached to the loading plate on top of the sample follows the change in height of the test piece during compression and during recovery after the load has been removed. The plasticity values are obtained from a simple arithmetical calculation. The complete test cycle for rubber compounds is only one minute, as contrasted with 30 minutes or more for other plastometers. The Black Rock Mfg. Co., Bridgeport, Conn.

Laboratory Work Table

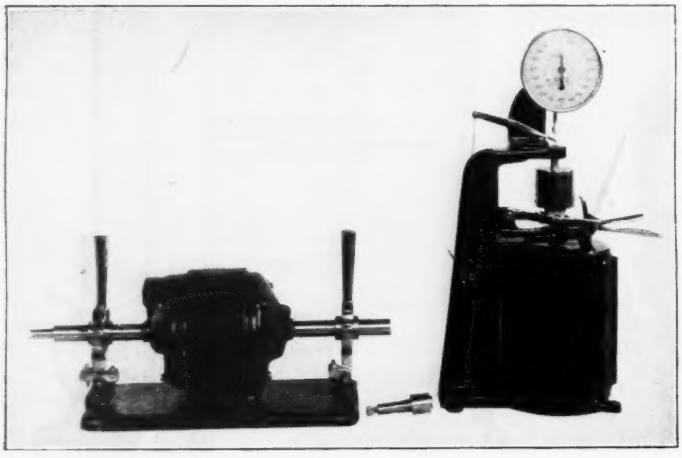
A WELL-DESIGNED work table is one of the essential pieces of furniture for the equipment of a convenient laboratory for every sort of chemical work. Such a table as that pictured leaves nothing to be desired in the facilities it affords the chemist for setting up apparatus for experimental work and conducting analyses. It is designed in sections, each with a different arrangement of cupboards and shelving. Thus varying lengths of table can be built up to suit the convenience of the user.

The plumbing provides for water, gas, and vacuum outlets and a central drainage soapstone gutter leading to a soapstone sink at one end of the table. Several electric connections are also provided with wiring and conduit complete to the floor line. Leonard Peterson & Co., Inc., 1222-1234 Fullerton Ave., Chicago, Ill.

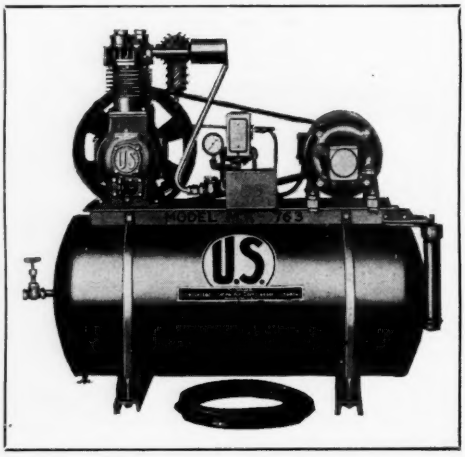
Laboratory Air Compressor

THE air compressor represented in the illustration is one in a series of heavy duty, 2-stage, air-cooled compressors specially designed for rubber laboratories and super service stations with varied air requirements. From the smallest one in the series, equipped with 1½ h.p. motor to the largest with one of 3 h.p. these compressors operate as smoothly and quietly as the hum of the motor. The synchronized assembly makes this an outstanding equipment.

It has an automatic controller set to maintain a pressure from 145 to 175 pounds of air. Twenty-five feet of 5-ply heavy duty air hose, chuck, and fittings are included with the unit. Any one of this series of compressors is well suited for service in a modern rubber goods manufacturing plant or laboratory. The United States Air Compressor Co., 5300 Harvard Ave., Cleveland, O.



The B. F. Goodrich Plasticity Tester



U. S. Air Compressor—Model MK-763

Rubber Industry in America

OHIO

The Goodyear Tire & Rubber Co., Inc., Akron, through Goodyear Service, Inc., recently opened one of the finest super-service stations in the world at Thirteenth St., between Chester and Walnut, Cleveland. The huge station, 200 by 70 feet with 90-foot display towers, is the last word in stations of this type and offers every service, convenience, and comfort to the customer. Frank P. Lide is manager.

Harry B. Hamlen, manager of the Goodyear credit department, following a recent meeting of the directorate, was made assistant treasurer, according to an announcement by President Paul W. Litchfield.

L. E. Judd, former editor of the *Akron Times-Press,* on July 15 became head of the Goodyear public relations department. He succeeds Hugh Allen, who will devote his entire time to Goodyear Zeppelin activities.

The Lincoln Rubber Co. recently was organized with factory and main office at 941 Wooster Rd., Barberton, to manufacture rubber products, specializing in household and surgeons' rubber gloves, using the trade name "Knuklfit." The factory is equipped with presses, and the company expects to develop a line of molded goods in the near future. It is operating 5 days a week, employing 25-35 people. Executives include President Wm. F. Kelley, Vice President Chester Scheneman, Secretary N. N. King, and Treasurer G. Burgner.

The Pneumatic Tube Steam Splicer Co., Baltimore, Md., has been succeeded by Gabriel Pneumatic Vulcanizer, Inc., 1407 E. 40th St., Cleveland.

The Clyde E. Lowe Co., Cleveland, maker of calender shells and circular tube curing mandrels, moved its factory from 2976 E. 81st St. to 9016 Manor Ave.

The Firestone Tire & Rubber Co., Akron, in a recent announcement by Harvey S. Firestone, Sr., who visited the exposition grounds in Chicago, stated that the company would erect a special building to show the production of rubber, tires, and other products from the raw materials at the 1933 World's Fair.

Mrs. C. W. Seiberling, Sr., 59, wife of the vice president and treasurer of the Seiberling Rubber Co., died at her home in Northfield on July 5.

The Pharis Tire & Rubber Co., Newark, manufactures Roadgripper, Holdtite, First Line, Comrade, Long Drive, Ample Air, and York automobile and bicycle tires and tubes. Officers are A. R. Lindorf, president; R. S. Drummond, vice president; Charles O. C. Lindrooth, secretary; R. S. Wyeth, treasurer; and Carl Pharis, general manager.

Dr. Webster N. Jones

Goodrich Notes

Dr. Webster N. Jones, general superintendent of the processing division, The B. F. Goodrich Co., Akron, resigned effective August 1 to become director of engineering, Carnegie Institute of Technology, Pittsburgh, Pa. Dr. Jones joined Goodrich in 1919 as research chemist and in 1925 he was placed in charge of the production chemical laboratories and the training of young technical men for the company. In 1927 he was appointed technical superintendent of the processing division and the following year became general superintendent of this major division. A testimonial dinner, of which Dr. H. L. Trumbull, manager of Goodrich chemical research, was chairman, was tendered Dr. Jones on July 18.

Sixty-five members of the Goodrich organization gave a farewell party June 30 for D. W. Johnson, Goodrich engineer since 1925, who will join the staff of the Yokohama Rubber Co., Ltd., Goodrich subsidiary, Yokohama, Japan, as operations engineer, where he will be associated with Arthur Kelly, another operations engineer. When Mr. Johnson arrives in Japan, R. F. Moody, stationed at the Yokohama factory for 2 years, will return to the Goodrich offices in Akron.

The annual Goodrich Play Day will be held on August 8 at Euclid Beach Park, Cleveland. Employment Manager Arthur G. Sprague heads the program which includes athletic and beauty contests, park amusements, and dancing.

Members of the Goodrich tire and accessories sales departments, their families, and friends, held their annual picnic and swimming party at Chippewa Lake Park, June 27.

In July, 1924, G. L. Matthias, general superintendent of mechanical goods, and Archie Evans, Harry Dewhirst, Ed Davidson, and Walter Freeman, engineers associated with him, went to a Michigan lake and when they returned a week later had caught 1,184 fish. This year the 5, with expectations of an even greater catch, on July 16 went to North Ireland lake in the Upper Peninsula of Michigan. The catch was 320 fish.

The Commercial Oil Co., 2945 E. 83rd St., Cleveland, recently closed a contract whereby it will handle the complete line of Miller tires and tubes through its more than 40 service stations in the Cleveland area. Over 100 officials and workers of the oil firm on July 15 discussed Miller products and policies with E. P. Weckesser, automobile tire and tube sales manager, Miller Rubber Products Co., a Goodrich subsidiary, and H. W. Delzell, manager of the Miller technical service department, July 15.

The Aetna Rubber Co., Ashtabula, through President S. T. Campbell has announced that Secretary and Sales Manager F. R. Jefferys and Comptroller Sam Hershberg are no longer with the company and their duties are being handled by other executives in the organization. George F. Hays has been appointed special sales representative on Aetna linemen's gloves. The company also reports a marked improvement during the past month in the demand for its genuine hard rubber storage battery containers, covers, and vents.

The Advance Rubber Co., 1796 E. Market St., Akron, recently was incorporated under the laws of Ohio to specialize in manufacturing and selling hard and soft rubber parts for storage batteries, automotive and electrical equipment, and a few other specialties, all under the trade name Adruco. Officers include F. R. Jefferys, president and sales manager, formerly secretary and sales manager of the Aetna Rubber Co., Ashtabula; S. Hershberg, treasurer and general manager, for many years in charge of factory management production and purchasing with the Aetna company; V. L. Mears, vice president in charge of plant engineering and mechanical equipment, who formerly held a similar position with Aetna; and K. J. Ertle, secretary and counsel. New equipment is being installed, and operations will begin about August 1, when the plant will be open to visitors.

MIDWEST

Anderson-Prichard Oil Corp., Oklahoma City, Okla., through C. H. Dresser, director in charge of industrial naphtha sales, reports that in 1930 its research laboratories handled 36 requests, confined to petroleum solvents or diluents; in 1931, 111; and in the first half of 1932, 114. These requests come from some of the largest manufacturers in all types of industry, and some very successful results have been obtained. No charge is made to any bona fide manufacturer. J. K. Stewart, director in charge of this research division, through the aid of his staff, has been very successful in showing many plants the means to more economical operation as well as to higher quality of finished products.

Bon-Dee Golf Ball Co., 1501 Beard Ave., Detroit, Mich., manufactures finished golf balls, golf ball centers, cores, and cover stock, and deresinated and precipitated balata. Officers are President Arthur L. Zeckendorf, Vice President Joseph C. Harley, Secretary Stanley B. Nicholas, and Treasurer V. A. Gillies.

National Safety Council, 20 N. Wacker Dr., Chicago, Ill., will hold its Twenty-First Annual Safety Congress and Exhibition at Washington, D. C., October 3 to 7.

Gillette Rubber Co., Eau Claire, Wis., closed one week beginning July 16 to make important changes in its mixing department for more efficient and economical operation. Production was resumed immediately upon completion of the work.

United States Rubber Co., Tire Department, Detroit, Mich., announces a new type of construction designed to prolong the life of heavy service tires, known as Shock Ply Construction, which provides for the use of 2 cord breaker plies of special design embedded in the tread rubber and extending from bead to bead that serve as a new and better means for anchoring the tread and sidewalls to the carcass. During curing the tread rubber beneath the shock plies blends with the carcass cushion rubber and serves still further to weld the tread and carcass into a single unit.

J. P. Bushnell Packing Supply Co., with principal office at 828 Buder Bldg., St. Louis, Mo., and branch at 419 N. Main St., Tulsa, Okla., handles rubber and asbestos packings, mechanical rubber goods and specialties, and rubber and metal hose. J. P. Bushnell is president, and Thomas Peckham purchasing agent.

Chicago Molded Products Corp., 2149 Walnut St., Chicago, Ill., offers custom molding service. Branch offices are maintained at 719 Union Ave., Ft. Wayne, Ind.; 1332 Oak St., Kansas City, and 215 Chouteau Trust Bldg., St. Louis, both in Mo.; 122 E. 42nd St., New York, N. Y.; 519 Stephenson Bldg., Detroit, Mich.; Harries Bldg., Dayton, and 401 Swetland Bldg., Cleveland, both in O.; Atlanta, Ga.; and 1012 N. Third St., Milwaukee, Wis. Officers are M. C. Bachner, president; W. L. Kelly, vice president; E. J. Bachner, secretary; E. F. Bachner, treasurer; and J. J. Borkenhagen, purchasing agent.

PACIFIC COAST

Bingham Pump Co., 445 E. Main St., Portland, Ore., manufactures hard rubber and rubber lined pumps for use with acids and acid solutions. Officers are R. V. Bingham, president; M. L. Edwards, vice president and purchasing agent; and E. Armbruster, secretary.

Pioneer Rubber Mills, with factory at Pittsburg and principal office at 353 Sacramento St., San Francisco, both in Calif., manufactures Copper King, Copper Queen, Golden Gate, Grainor, Victor, Reliance, and Sunset rubber belting; Live Oak, Seal Rock, Sunset, Native, Golden State, Battleship, Western, Senator, Crackproof, Wearso, Golden Gate, Victor, Guardian, Defender, Skookum, Owl, Reliance, Pioneer, Sunproof, Rubro, and Clover rubber hose; Skookum Piston Rod, Victor Piston Rod, Diablo, Native, A 1 Gum, and Guardian rubber packing; and other mechanical rubber goods. Branches are at 822 E. Third St., Los Angeles, Calif.; 589 E. Illinois St., Chicago, Ill.; 322 Occidental Ave., Seattle, and 1010 "A" St., Tacoma, both in Wash.; 100 First St., Portland, Ore.; 1728 Wazee St., Denver, Colo.; and 208 S. W. Temple St., Salt Lake City, Utah. Officers include G. S. Towne, president; D. D. Tripp and H. R. Mansfield, vice presidents; and W. L. Reed, secretary.

D. & M. Machine Works, Torrance, Calif., has announced that Wm. E. Shawger, for 18 years with the Rubbercraft Corp. of California, Ltd., Torrance, resigned as its superintendent to become assistant superintendent of the D. & M. Rubber Department. The Machine Works company manufactures pistons and rods for oil well slush pumps; so maintains its own rubber department and foundry in which are manufactured the rubber and the castings of which the pistons are constructed.

Wm. E. Shawger

B. E. Dougherty, for the past 3½ years vice president and general manager of The C. P. Hall Co. of California, resigned that position and on June 1 organized his own company, The B. E. Dougherty Co., 1807 E. Ninth St., Los Angeles, Calif., which acts as agent to the trade in Southern California for Godfrey L. Cabot, Inc., on carbon black, for The E. W. Colledge, GSA, Inc., companies on destructive distilled pine products, and for several other large manufacturers of chemicals and pigments used by the rubber industry.

NEW JERSEY

Tire manufacturers in New Jersey, well pleased with present conditions, are looking for continued good business the remainder of the season. Mechanical goods production has dropped off some; but this decline is expected in certain lines. Hard rubber output remains unchanged; while rubber tile manufacture also has decreased a little. Rubber bathing goods and swimming tubes are holding their own.

Regal Tire Co. opened a branch at 211 E. Front St., Trenton, handling Murray Rubber Co. tires. Jesse Thorn, Jr., is Regal manager.

Horace T. Cook, president of the Acme and Hamilton Rubber companies, Trenton, and Mrs. Cook have gone to Fisher's Island for the summer.

Murray Rubber Co., Trenton, still maintaining a night force, reports that orders for tires and tubes remain active.

Joseph Stokes Rubber Co., Trenton, announces unchanged business.

Luzerne Rubber Co., Trenton, found little increase in hard rubber production. Treasurer C. Dudley Wilson and Mrs. Wilson are vacationing at Beach Haven.

Robert J. Stokes, president of The Thermoid Company, Trenton, spent July with his family in their summer home on the Massachusetts Coast. Thermoid reports unchanged business.

Pocono Rubber Cloth Co., Trenton, experienced increased business with a gain in orders for the fall trade.

John W. Reed, of Asheville, N. C., who covers southern territory for the Mercer Rubber Co., Hamilton Square, N. J., spent a few days at the factory. He is the son of Vice President and Treasurer I. Ely Reed.

Essex Rubber Co., Trenton, still operates normally in all departments.

Whitehead Bros. Rubber Co., Trenton, continues normal on mechanical goods while the rubber shoe department has increased production.

Puritan Rubber Co., Trenton, reports slightly declining business. Orders for rubber tiling are expected to increase during the late summer.

Samuel H. Renton, vice president of the Vulcanized Rubber Co., Morrisville, Pa., is enjoying his annual vacation along the New Jersey coast.

OBITUARY

Internationally Known Physicist

THE passing of Dr. George K. Burgess, Director of the U. S. Bureau of Standards, at Washington, D. C., is a distinct loss to science and technology. His sudden death resulted from a cerebral hemorrhage while in conference with staff officials on July 2, 1932.

Dr. Burgess entered the government's scientific service more than 25 years ago and by his ability and application advanced steadily from assistant physicist to director of the bureau. He was admittedly in the first rank of metallurgists of the country, and his work in this field won him nation-wide recognition. He was active in many scientific and engineering bodies in the United States and foreign countries and received honorary engineering doctorate degrees from several American universities. He received his B.S. from the Massachusetts Institute of Technology in 1896 and his Sc.D. with "very honorable mention" from the University of Paris in 1901.

Dr. Burgess was born in Newton, Mass., on January 4, 1874. He leaves his widow.

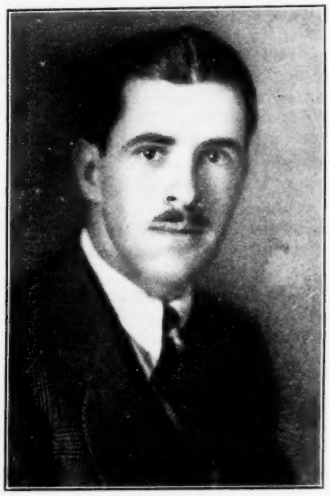
Carbon Black Salesman

WALTER GIRAUD HIGGINS, who died June 22, was born at Mt. Vernon, N. Y., November 28, 1901. After graduating from Mt. Vernon High School, he took special courses at Columbia University.

He was connected with Standard Oil Co., Charleston, W. Va., branch, and later with Standard Oil Co. of New Jersey, Newark branch. He next went to the factories of the United Carbon Co. in Texas for several months to be educated in the carbon black business from the ground up.

Late in 1929 he was assigned to the sales force of the United Carbon Co., Empire State Bldg., New York, N. Y., covering the Eastern District. This position he held until the time of his death. He was the son of William W. Higgins, manager of the company's New York office.

Surviving are his widow, his parents, and one brother.



Walter G. Higgins

First Goodyear President

PNEUMONIA and throat paralysis caused the death at his home in New York, N. Y., on July 11 of Raymond C. Penfield, first president of The Goodyear Tire & Rubber Co., Akron, O.

He was born in Willoughby, O., May 31, 1860. After graduating from Wesleyan University, Middletown, Conn., in 1885, he worked for his father's company, maker of machinery, and succeeded him to the presidency when the elder Mr. Penfield died in the '90's. During the war the company, consolidated with an English firm, manufactured war munitions. Mr. Penfield retired as president about 4 years ago.

From 1903 until his retirement from business he was also president of the American Equipment Co., Chicago, Ill., of which he was one of the founders. He invented the Penfield system for handling bricks during manufacture and headed the equipment company and the New York Brickhandling Corp., which he organized in 1918 and was active in for about a decade.

He was president of the Goodyear company for several years since its founding. Then he was succeeded by his sister's husband, Frank A. Seiberling, now president of the Seiberling Rubber Co.

The deceased belonged to the Westchester Country Club, the Chicago South Shore Athletic Club, and the Ohio Society of New York.

Surviving are his widow, 2 sons, a daughter, a sister, and 5 grandchildren.

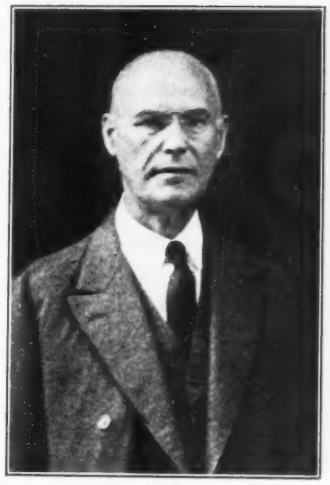
Funeral services were held at his home on July 14. Interment was in Willoughby.

Goodrich Director

COLONEL CHARLES C. GOODRICH, 61, son of the founder of The B. F. Goodrich Co., the first rubber chemist Goodrich employed, and a director of the corporation, after a long illness died July 10 at his home in York, Me. He was a brother of Colonel D. M. Goodrich, chairman of the Goodrich board, and of Mrs. Isabelle Breckenridge, of New York, who survive him.

Born in New York, Mr. Goodrich came to Akron in 1895 after his graduation from Harvard. After several years' employment in the factory, he became a member of the board of directors in 1902 and was made assistant to the general superintendent. He served as general superintendent for a time, but retired at the death of his mother. He last visited the Goodrich factory in November, when he attended a meeting of the directorate.

He married Miss Mae Gellatly, of New York, and they lived in Akron until his retirement from active business. Mrs. Goodrich died several years ago. They had no children.



Charles C. Goodrich

Spending many summers at York, a summer resort, Mr. Goodrich finally decided to make his home there. Two years ago he won the Republican nomination for state representative and subsequently was elected to the place in the lower house. This spring he was selected a delegate to the Republican National Convention, but ill health prevented his attendance.

He was a Thirty-second degree Mason, Knight Templar, a Mystic Shriner, and a member of the American Legion. Three years ago he was chosen chairman of the newly formed York water district. He was president of the York Country Club and a trustee of the York Harbor Reading Rooms and at one time served on the Akron City Council. He belonged also to the University, Racquet and Tennis, Army and Navy, and Harvard clubs, all of New York.

Mr. Goodrich was a member of the American Metal Co. of New Mexico, the Levisa Mines Co., and Moa Bay Iron Co.

Funeral services were held on July 12 at the home of Mrs. Breckenridge. Burial was in York. Among those attending was James D. Tew, Goodrich president.

Advertising Man

ON JUNE 11 death came to George K. Brand, who had been suffering from pulmonary thrombosis, the after effects of an appendicitis operation, from which he had apparently been recovering quite satisfactorily. For the past 2 years he had been in charge of the advertising for Cambridge Instrument Co., Inc., Grand Central Terminal, New York, N. Y.

He was born in Silver Creek, N. Y., about 27 years ago. After graduating from Western Reserve University, Cleveland, where he majored in electrical engineering, Mr. Brand came to New York and worked for several advertising agencies before joining the Cambridge company.

Czechoslovakian Industrialist

THOMAS BATA, internationally known shoe manufacturer, whose tragic death in an airplane crash near Zlin, on July 12, was born in Zlin in 1876, the son of a cobbler by whom he was trained at an early age in shoemaking and marketing. By the time he was 18 the youthful Bata, together with a brother and a sister, started on his own account to manufacture low-grade shoes. Ten years later we find him in Lynn, Mass., where he worked for a year to acquire a thorough knowledge of American shoemaking methods. He also gained knowledge of German and English practice, and being well equipped with practical experience, he returned to Czechoslovakia and reorganized his factory.

During the war he was able to expand his enterprise so that he was soon employing 2,000 persons. However the spectacular rise that made him known as the Henry Ford of Czechoslovakia dates from 1922 when the crown was stabilized and he cut his prices 40%. Zlin developed from a tiny hamlet into a town of 30,000 inhabitants, almost all dependent on the Bata works. Besides mass production methods he introduced a profit-sharing system which includes all employes from the highest to the lowest. His plant in Zlin comprises a hospital, moving picture theaters, and restaurants, and he had his own newspaper and his own airport. He also built a network of sales centers and factories in Europe. During 1931 he flew to Africa and the British and Dutch Indies to promote sales there and to study the prospects for factories in Singapore and Calcutta, acquiring a large factory in the latter city.

Foster Rubber Co., 103 Federal St., Boston, Mass., lists as its products rubber heels, composition soles and taps, rubber soling and strips, crutch, cane, and chair tips, and heel cushions under the following trade names: "Cat's Paw," "Foster Orthopedic," "Tred-Air," "Foster," and "Star." Benjamin H. Pratt is president, and Herman L. Beal, treasurer.

Frazier-Stanton, Inc., Salem, Mass., recently was formed with a capital of $100,000 to deal in tires, tubes, and accessories. Officers are Wallace Frazier, president; David Linsky, treasurer; and Ralph A. Stanton, secretary.

U. S. Gutta Percha Paint Co., Providence, R. I., and **Appleton Rubber Co.,** Franklin, Mass., in cooperation with various other New England manufacturers are sending out personal invitations, accompanied by illustrated booklets, urging the readers to visit their plant and this section of the country.

The J. W. Riley Tire Store, Inc., Springfield, Mass., incorporated recently with 100 common shares no par value. Officers are William H. Marland, Treasurer James W. Riley, and Secretary Walter W. Donnell.

NEW ENGLAND

Corone Wire Insulators, Inc., Putnam, Conn., announces that the Johnson super production tubing and straining machines and the application of the high production features to other tubing machines will in the future be manufactured and sold in sizes up to 4-inch worm diameter, by the New England Butt Co., Providence, R. I., under exclusive license of Edgar H. Johnson, the patentee.

The Boston Shoe Fair, Hotel Statler, Boston, Mass., July 11, 12, and 13, listed among exhibiting rubber manufacturers: Avon Sole Co., Avon, Mass., which showed its new Duflex-Nap sole, a non-slip, light weight sole in white, tan, or black, and its regular line of soles for men, women, and children, in charge of L. E. Packard, W. H. King, J. C. Reading, and Howard Harding; Panco Rubber Co., Chelsea, Mass., presided over by Sales Manager M. J. Bernstein, which displayed Panco Sure-Step Heels, the new Pan-Crom soles in many sizes and colors, a full line of non-marking material, and a line of composition black soles and colored sport soles; Foster Rubber Co., Boston, under William Pratt, which featured "Cat's-Paw" new and improved sport heels carrying the Foster friction plug to prevent slipping, and a full line of Foster orthopedic rubber heels. In spite of business conditions most exhibitors reported a very healthy buying giving every indication that business, at least in the boot and shoe end of the game, will show considerable improvement in the very near future. A big golf tournament at Hingham, Mass., and a sail to Pemberton and the outing there were entertainment features.

The Brockton Webbing Co., Brockton, Mass., was bought and merged with the Hope Webbing Co., manufacturer of woven and braided fabrics, Providence, R. I., and no longer operates as an independent unit, according to a recent announcement by Charles P. Roundy, of the Hope company.

The Fisk Tire Co., Inc., Chicopee Falls, Mass., announced that on July 1, E. H. Broadwell, in charge of manufacturers' sales, resigned. Although he has made no future plans, it is understood that he may assist some committee in the Fisk reorganization. Fisk company launched an extensive campaign throughout New England, presenting its product as "Made in New England." Newspaper advertisements carry such appeals as: "Support New England Industries—Buy Fisk Tires;" "Keep New England Wheels Humming—Buy New England Made Goods."

The Armstrong Rubber Co., Inc., West Haven, Conn., manufactures Famous Coach, Armstrong Heavy Duty, Armstrong, and Senior pneumatic tires and tubes. Officers include: James A. Walsh, president and purchasing agent; Albert H. Barclay, vice president; and Fred Machlin, secretary-treasurer.

Ernest Jacoby, 79 Milk St., Boston, Mass., dealer in crude rubber and carbon black, has added clay to his line of rubber materials.

Ernest I. Kilcup, secretary and acting treasurer of the Davol Rubber Co., Providence, R. I., at the thirty-fourth annual convention of the National Association of Credit Men in Detroit, Mich., was elected vice president. This is the first time this distinction has come to the rubber industry. For many years Mr. Kilcup has been active on important committees of the national association and of the local organization in Providence, and from 1923 to 1931 he served as a director of the association.

The United States Rubber Co. appointed Campbell-Ewald Co., Boston, Mass., to direct the advertising of its footwear, clothing, golf balls, flooring, druggists' sundries, mechanical rubber goods, and other products. Campbell-Ewald handles also the advertising of U. S. Rubber's tire division at Detroit.

The Norwalk Tire & Rubber Co., Inc., Norwalk, Conn., announces the completion of its battery department installed under the supervision of Arthur Mayer, of the Grant-Mayer Co., manufacturer of G & M batteries for the past 8 years. The Norwalk battery will be the same in every respect as the G & M and will be built under a patented process eliminating separator trouble and buckled and loose plates. Norwalk also reports that it is ready to make delivery on the new Norwalk Gold Standard "Air Way," a doughnut-type tire. The company has adopted, too, the new tire construction providing for the use of 2 cord breaker plies built under the tread.

The Standard Tire Sales Co. opened a new service station and show rooms at 318 Chesnut St., Springfield, Mass.

Fred J. Haggerty has withdrawn from the Boston Belting & Rubber Co., 222 Summer St., Boston, Mass. He is succeeded by John N. MacDonald.

The Harrison Coat Co., 27 Sudbury St., Boston, Mass., is now controlled by the Aetna Rubber Co., also of Boston.

James Field has taken over management of the Columbus Tire Exchange, 352 Columbus Ave., Boston, Mass.

The Murray Tire Sales Co. of New England was recently incorporated at Boston, Mass., with 150 common shares of no par value. Frank W. Mayer is president; Russell T. Green, 64 Conant Rd., Atlantic, Mass., treasurer; and Manuel B. Miguel, secretary.

Statler Tire & Supply Co., Boston, Mass., incorporated with 200 shares of common stock no par value. Incorporators are: Samuel Korin, president; Benjamin Turesky, 27 School St., Boston, Mass.; and Morris Turesky.

The Latex Foot Appliance Co., 113 Monroe St., Lynn, Mass., recently was organized to manufacture various foot appliances. Charles W. Burnham heads the company.

EASTERN AND SOUTHERN

W. O. Rutherford

Rutherford Indicts Tire Manufacturers

"What the tire industry needs is not legislative control but sound, sensible sales management," thus speaks W. O. Rutherford, president of the Pennsylvania Rubber Co., Jeannette, Pa. "Tire manufacturers have encouraged large distributing organizations such as mail order houses, chain systems, and oil companies to engage in the retail tire business.

"In effect, management sold out millions invested in scientific research and development, advertising, sales administration, and sales initiative for private brand volume.

"That these things are not necessary to the industry's success is demonstrated convincingly by the individual success of one of the major companies, who had the courage to combat all of these new influences and whose business typifies precisely what the tire industry needs—sound, efficient sales administration.

"Both means and method are available, and it only requires unity of action to restore the industry to profitable operation and perpetuate the great names which its scientific minds have created."

Titanium Pigment Co., Inc., manufacturer of titanium oxide, composite, and titanium pigments, announces that D. W. Robertson, formerly its metropolitan sales representative, has been made general sales engineer.

R. H. Eagles, of J. M. Huber, Inc., manufacturer of carbon blacks, 460 W. 34th St., New York, N. Y., sailed recently on a 2-month trip when he will visit J. M. Huber, Ltd., in England and other European agents of the company.

Real Art Rubber Molds Co., controlled by John B. Cuneo, 37 Luqueer St., Brooklyn, N. Y., manufactures Flexoart rubber molds for casting reproductions of art objects, novelties, etc., out of plaster, marble, cement, or other casting compositions. The firm makes also the metal patterns on which it vulcanizes the rubber molds.

American Cyanamid & Chemical Corp., 535 Fifth Ave., New York, N. Y. Effective July 1 in order more effectively to place at the disposal of its customers the combined technical, manufacturing, sales, and shipping facilities of the industrial chemical and insecticide units of the American Cyanamid Co. and affiliated companies, American Cyanamid & Chemical Corp. has consolidated the activities formerly carried on by the following companies: American Cyanamid Co., Industrial Chemical Division; American Cyanamid Sales Co.; The Kalbfleisch Corp.; A. Klipstein & Co., Inc.; John C. Wiarda & Co., Inc.; Superior Chemical Co., Inc.; and Fumigators Supply Co. In addition the activities of the following at the same time have been placed under the control of American Cyanamid & Chemical Corp.: American Powder Co., The Selden Co., Structural Gypsum Corp., Owl Fumigating Corp., and The Kalbfleisch Corp. of Surinam.

The Naugatuck Chemical Co., 1790 Broadway, New York, N. Y., through Vice President E. B. Curtis announced that from August 6 to 20 inclusive manufacturing operations at its Naugatuck, Conn., plant will be suspended when employes will vacation and general repairs and inspection of factory equipment will be made. Offices in New York and Naugatuck will remain open, however, to take care of customers' wants. Mr. Curtis plans a trip to the Pacific Coast this month to call on the trade and to confer with the company's recently appointed Coast sales representative, H. M. Royal, Inc., Los Angeles, Calif.

Pablo Calvet & Co., 112 Wall St., New York, N. Y., crude rubber dealer, imports Centrals.

Clark, Childs & Co. and **F. B. Keech** on July 1 organized as Clark, Childs & Keech, crude rubber brokerage.

Exposition of Chemical Industries

Preliminary announcement has been made that the Fourteenth Exposition of Chemical Industries will be held at Grand Central Palace, New York, N. Y., February 27 to March 4, 1933. This exhibit, popularly known as the Chemical Show, will be devoted to the newest developments in raw materials, machinery, and manufactured products. Already more than 176 companies representative of over 40 American chemical industries have reserved space. Admission will be without charge and by invitation or by registration only. The last exposition held in 1931 was attended by 103,000 and 22,000 registered.

E. I du Pont de Nemours & Co. recently endorsed the plan for increased use of trade acceptances submitted by Vice President Irénée du Pont. The parent organization and its subsidiaries and affiliated companies all will accept short-term acceptances from responsible customers in payment of goods sold to them and will issue promptly trade acceptances in payment of goods purchased. The company defines a trade acceptance as a time draft drawn by the seller upon the purchaser and customarily sent by the former to the latter, accompanying the invoice for goods sold. The buyer signs the acceptance across the face, with date and place of payment, and promptly returns it to the vendor, who then holds a 2-name commercial paper with a definite maturity date, eligible for rediscount at the Federal Reserve Banks if maturing within 90 days. Included among other large corporations using trade acceptances is the United States Rubber Co.

Consolidated Products Co., Inc., dealer in used machinery and equipment, has moved to Rooms 2008-14 of its present location, 15 Park Row, New York, N. Y.

RUBBER BOAT WITH OUTBOARD MOTOR

This combined rubber air boat and outboard motor was developed by the New York Rubber Corp., Beacon, N. Y. The motor is attached by a wood and aluminum bracket laced to the boat pontoons, in a cradle shaped, 2-sleeve pocket made of pontoon fabric. The motor weighs 34 pounds. Speed approximates 10 m.p.h.

American Rubber Executives

The brief personal sketches to be published on this page will eventually form a valuable record of the part played by American rubber executives in the progress of the industry. Presidents, vice presidents, secretaries, treasurers, sales and advertising managers, and other "key-men" are invited to send us their biographical data.

Perry Eugene Ammon, br. mgr. *b.* 1885, Elyria, O.; elem. and high schs.; started with Goodyear T. & R. Co. as office boy in 1906; successively, salesman, asst. br. mgr., br. mgr., Detroit, Mich., since 1919. *Member:* Knights Templar, Blue Lodge Chapter. *Address:* Goodyear Tire & Rubber Co., 6540 Hastings St., Detroit.

J. J. Blandin, mgr. U. S. Naval Acad.; in Mexico for the Continental Rubber Co.; Goodyear T. & R. Co. since 1912: asst. foreman, Akron; 1913, asst. to mgr., crude rubber purchasing div.; acting mgr. for brief period; in Singapore 1915 until 1922 supervising crude rubber purchasing and establishment of plantations; 1923, apptd. to U. S. Bd. of Investigation; mgr. crude rubber purchasing division and rubber plantations since 1925. *Address:* business, Goodyear Tire & Rubber Co., Akron, O.

Chester E. Carroll, div. mgr. *b.* Chicago, Ill., Oct. 18, 1889; dist. mgr., Detroit, Mich., Hudson Motor Car Co., 1911-18; B. F. Goodrich Rubber Co., Akron, O., Diamond Tire Div., 1918-30; Hood & Miller Div., 1931; div. mgr. associated tire lines, Goodrich, 1932. *Address:* 145 Storer Ave., Akron.

Ross J. Cope, pres. *b.* Oct. 31, 1889, Columbiana Co., O.; high sch. and Oberlin Coll.; Firestone T. & R. Co., for past 17 years various positions in sales dept.; pres., Firestone T. & R. Co. of Calif., Firestone Battery Co. of Calif., Xylos Rubber Co. of Calif. *Address:* 2525 Firestone Blvd., Los Angeles, Calif.

Louis E. Douglass, dist. mgr. *b.* Sept. 20, 1890, Black Brook, N. Y.; elementary and high schs., Burlington Bus. Coll., June, 1908; office mgr. and salesman, National Cash Register Co., 1909-16; salesman, asst. mgr., and dist. mgr., Firestone T. & R. Co., 1916 to date. *Member:* K. of C., 4th degree, Elks, United Commercial Travelers. *Address:* business, 292 Central Ave., Albany, N. Y.

Reginald Harrison Eagles, sales mgr. *b.* June 9, 1895, Madison, N. J.; Madison H. S.; A. B., Cornell U., 1915; 1915-18, Phelps Dodge Co. and N. J. Zinc Co.; second lieut., Chem. Warfare Ser., 1918; sales mgr., J. M. Huber, Inc., since 1923. *Member:* dir., Carbon Black Export Assn., Tau Kappa Epsilon, Engineers and Ardsley clubs. *Address:* business, J. M. Huber, Inc., 460 W. 34th St., New York, N. Y.; residence, 66 Euclid Ave., Hastings-on-Hudson, N. Y.

Henry Green Harper, br. mgr. *b.* July 30, 1896, Charlotte, N. C.; elem. and high schs.; A. B., U. of N. C., 1917; Goodyear T. & R. Co. since July, 1917, in all capacities in Richmond, Va., office, now br. mgr. *Member:* Oasis Temple, Shrine, Kiwanis Club. *Address:* 701-5 W. Broad St., Richmond.

W. J. R. Hauser, v. pres. *b.* St. Gilgen, Austria, July 14, 1902; Akademisches Gymnasium and Vienna Academy of Commerce, 1918, Vienna, Austria; 1919-20, mgr. cable dept., Sociedád General de Exportación, Buenos Aires, Argentina; 1921-25, J. Rosenbaum Grain Co., Chicago, Ill.; working on promotion of Revertex since 1927: in Germany, Kautschuk Ges., Frankfurt a. Main; England, W. Glur & Co., Ltd., London; United States, L. W. Dumont & Co., New York; v. pres., Revertex Corp. of America, 1930. *Associate Member:* Rubber Div., A. C. S. *Address:* 40 Rector Street, New York, N. Y.

George Henry Kemmerer, mgr. *b.* St. Louis, Mo., Sept. 23, 1891; Irving Gr. Sch., St. Louis, Emaus H. S., Emaus, Pa.; ticket office, Pullman Co., to May, 1909; Goodyear T. & R. Co. since 1909: clerk, St. Louis, 1909-11; gen'l line salesman, 1911-20; 1921-22, br. mgr., Salina, Kan., div. truck tire sales mgr.; salesman, St. Louis, 1922-27; br. mgr., Toledo, O., 1927-Oct., 1931; mgr. Goodyear Service, Inc., St. Louis, since Oct., 1931. *Member:* Masons, St. Louis Chamber of Commerce. *Address:* business, Goodyear Service, Inc., 2843 Washington Ave., St. Louis.

John Karl Miller, Jr., dist. mgr. *b.* May 8, 1894, Marietta, Pa.; Marietta High Sch., Conway Hall, B. S. M. E., U. of Pittsburgh, 1924; started as Scranton, Pa., rep. for Firestone T. & R. Co., Sept., 1924; 1927-31, truck tire sales mgr., Phila. dist.; Feb., 1931, to date, Scranton dist. mgr. *Member:* Phi Kappa Sigma, Amer. Legion, Kiwanis, F & A M, Irem Temple A A N M S, Irem Country Club, Pennsylvania Motor Truck Assn., Chamber of Commerce. *Address:* business, Wyoming Ave. and Phelps St.; residence, 528 Wheeler Ave., Scranton.

James A. Moore, Jr., personnel mgr. *b.* Nov. 12, 1902, Seattle, Wash.; Todd School, Culver Mil. Academy; B. S., Dartmouth Coll., 1924; foreman, National Bank, Chicago, Ill., July-Dec., 1924; real estate and mining, Jan., 1925-Sept., 1926; Standard Oil Co. of Calif., Sept., 1926-June, 1929; personnel mgr., Firestone T. & R. Co., Sept., 1929 to date. *Member:* Zeta Psi Fraternity. *Address:* 2525 Firestone Blvd., Los Angeles, Calif.

Gordon I. Neff, pres. and gen. mgr. *b.* Chicago, Ill., Oct. 18, 1892; grade and high schs.; eng., Lewis Inst.; bus. admin., U. of Cincinnati; engr. and supt. of construction, sales engr., Kosmos Portland Cement Co.; Goodyear T. & R. Co., gen. line, mech. goods, sole and heel, truck tire salesman, zone mgr., asst. br. mgr., br. mgr.; pres. and gen. mgr., Wayne Tire Co., Toledo, O. *Member:* Masons, Kiwanis, Elks, Chamber of Commerce, Y. M. C. A., Sylvania Country Club. *Address:* 1001 Madison Ave., Toledo.

Harold S. Quackenbush, br. mgr. *b.* Johnston, N. Y., Feb. 25, 1892; elem. and high schs., 1911; retail clerk, 1911-12; telephone engineering, 1912-16; br. tire credit and office mgr., 1916-18; Goodyear T. & R. Co. since 1918: tire salesman, 1918-22; tire br. mgr., Portland, Ore., 1922 to date. *Member:* Masons, Scottish Rite, Shrine. *Address:* 500 Raleigh St., Portland.

A. Jae Sears, div. mgr. *b.* Marshalltown, Iowa; Howe Military Sch., Michigan U.; salesman, Fisk Rubber Co., Minneapolis, Minn., 1909-12; Goodyear T. & R. Co., from 1912 to date: 1912-13, salesman; 1913-14, St. Paul, Minn., br. mgr.; 1914-17, Sioux City, Iowa, br. mgr.; 1917-20, Milwaukee, Wis., br. mgr.; 1920-24, tire sales mgr. western div.; 1924-25, St. Louis, Mo., br. mgr.; 1925-28, Chicago, Ill., br. mgr.; 1928 to date, mgr. western div. *Member:* Kappa Sigma, Portage Country Club, Akron, O. *Address:* business, Miller Rubber Co. of N. Y., S. High St.; residence, 514 N. Portage Path, Akron.

David H. Shirk, pres. and gen'l mgr. *b.* Oct. 14, 1892, Lancaster, Pa.; Swarthmore Prep. Sch., Cornell U., Carnegie Inst. of Tech.; made study of mineral sources, production, and industrial application of antimony; worked on tungsten and molybdenum for use in incandescent lamp; pres. and gen'l mgr., Rare Metals Products Co., Belleville, N. J., for 17 years. *Member:* A. C. S., Glen Ridge, Glen Ridge Country, and Montclair Golf clubs. *Address:* 345 Ridgewood Ave., Glen Ridge, N. J.

Edward J. Smail, Jr., pres. and v. pres. *b.* Dec. 22, 1888, Braddock, Pa.; Shady Side Acad., Pittsburgh, Washington & Jefferson Coll., Wash., Pa.; sales dept., 1912-19, various rubber companies; mgr., National Aniline & Chemical Co., Akron, 1919-22; since 1922, v. pres. and sales mgr., Rubber Service Laboratories Co., Akron; pres., Elko Chemical Co. *Member:* Phi Kappa Sigma, Portage Country and Akron City clubs, Masons. *Address:* 611 Peoples Bank Bldg., Akron.

Rubber Industry in Europe

GREAT BRITAIN

Research Association of B.R.M.

The Cable Section of the Research Association of British Rubber Manufacturers met June 21 in London at a luncheon conference. Col. B. J. Eaton, of the Rubber Research Institute of Malaya, who is visiting England, spoke on the progress of research work in the East which is now centering chiefly on reducing costs and efforts to meet manufacturers' requirements with new goods. The most promising new product, he said, is the thin air-dried sheets which are to replace smoked sheet and pale crepe.

During the discussion following, P. Schidrowitz pointed out that the use of Iceland moss and similar agents in obtaining creamed latex was objectionable as danger existed of introducing undesirable substances in the vulcanized product. To this point Colonel Eaton replied that a creamed latex could be obtained with sodium bisulphite which could be washed out of the rubber.

D. F. Twiss emphasized the need of considering quality as well as quantity of output in clone selections and the danger of ending by producing more inferior rubber.

H. C. Harrison referred to a difficulty in connection with special types of rubber. Having experimented with sprayed latex rubber and found it excellent, especially for molding finish, he could not obtain this rubber, for it all went to the United States.

T. R. Dawson in "World Exports of Insulated Cables" said the total value of world exports which averaged £11,500,000 from 1925-30, declined 42% in 1931. England was by far the worst hit, falling from first to second place below Germany. Italy and Czechoslovakia were the only countries to improve business in 1931. The decline, however, by weight was only 12½%, indicating that it was chiefly the price of the commodity rather than the volume of trade that had decreased. The fall in average price was about 15.3% but was offset to a certain extent by the still heavier decline in prices of most of the raw materials: H. C. copper, 24%; lead, 27-28%; tin, 17%; paper, 16%; rubber, 17%.

Various factors bearing on future cable exports were reviewed. While on the one hand the development of the British grid system, the electrification of railways, the growth of water power, all promoted increased use of electric cables, the state of international trade was very gloomy. The widespread nationalism, Mr. Dawson remarked, was causing countries everywhere to seek self-sufficiency, and governments were stopping imports by tariffs, import quotas, foreign exchange restrictions, and campaigns of the "Buy British" type. Stopping imports meant stopping someone else's exports, and the fierce trade war amounted to international trade suicide.

Finally H. A. Dayton, in reading his paper, "The Absorption of Water by Rubber," pointed out that rubbers should as far as possible be tested under humidity conditions met in service. A new form of the differential equation of diffusion was shown, which among other things explained why drying saturated rubber was quicker than the saturation of dry rubber.

G. Martin said that the time of drying raw rubber was affected by various chemical treatments of the coagulum. Mr. Dayton replied that it was difficult to tell from the time of drying alone what was the action of chemical treatment of the coagulum, but he hoped to devise tests which would separate the physical properties involved. Mr. Twiss suggested that water absorption might be measured by drying tests rather than saturating tests because of the shorter period required.

Company Notes

English Insulating Machines, Ltd., has been founded by Livesey & Crowther, Ltd., Manchester, importer of rubber machinery, to make machinery of the Pourtier type, hitherto imported from France, for insulating wires with rubber. The firm also expects to start manufacturing elastic braiding machines which are now brought over from Switzerland. It seems that the recently imposed duties on elastic braiding have led to increased demand for the British article; consequently many factories have been extended to take advantage of the new condition.

Rubber wall paneling, solid and perforated, table edging and tops, and plain and fancy wall strips, all made to harmonize with the existing decorative scheme, have been supplied by William Warne & Co. to Broadcasting House.

So far Leyland & Birmingham Rubber Co. has laid rubber floors in over 300 moving picture houses and theaters in the United Kingdom alone.

Bank directors have received proposals to install behind bank counters electric rubber mats having connection with a police station. Then a cashier, when held up, would, unobserved by the robber, step on the mat to flash an indicator at the police station.

An ingenious London society woman hit upon the idea of draping the walls of her dining room, which faces the street, with white rubber curtains to keep out the noise. Not only do the curtains serve this purpose admirably, but are decorative also.

Chromium platers complain that when the work is small, the wires and the work are hard to manipulate when rubber gloves are worn, also that the gloves are too slippery for handling metal articles. To overcome the latter difficulty a covering of crepe rubber over the inside of the glove is being tested.

Arnold & Murray announces the removal of its offices to 33 Eastcheap, London, E. C. 3.

Elastic Webbing Trade

Census returns of the elastic webbing industry which compare figures for 1924 and 1930 have been released. Only firms employing more than 10 persons are considered here; however information for 1930 is still lacking from firms of this class which in 1924 employed 290 persons, about 5%.

In 1930, 172,383,000 yards of elastic cords and braids, value £523,000, were produced against 150,475,000 yards, value £487,000, in addition to 32,914,000 yards of elastic webbing up to 2 inches, value £414,000, against 47,513,000 yards, value £649,000; and 4,487,000 yards of webbing above 2 inches, value £214,000, against 4,450,000 yards, value £247,000. These statistics indicate an increase of 15% in output of the first class of goods in 1930, but a decrease of about 30% in the second type; the third type was about the same. The prices for the 3 kinds in 1930 were respectively 94%, 92%, and 86% of those for 1924.

Besides the above, other products of the elastic webbing trade were produced, value £508,000 against £540,000 in 1924.

The firms under consideration used materials costing £795,000 in 1930 instead of £1,015,000 in 1924. They paid for work given out to other firms, £22,000 instead of £50,000; while their net output came to £842,000 against £858,000. The net output per person employed was £153 against £156. The number of operatives employed in 1930 was 5,102 and office personnel, 408.

Adams Rubber Suspension

An improvement on the original Adams rubber suspension patent, No. 236,243, is being investigated. Meanwhile the Rubber Growers' Association is allowing the original patent to lapse. This suspension for automobiles comprises a block of rubber with radial ribs and grooves on opposite sides and 2 plates having corresponding ribs and grooves to engage the grooves and ribs on the rubber block to cause a torsional or shearing action on the opposite surfaces of the rubber block when rotational movement occurs between the plates. Four such blocks are located at the axles

of 4 lever arms, 2 arms being connected with each axle instead of the usual half elliptic laminated springs.

The suspension has been tested by experts, who regard the invention as unique because the load sustaining spring is arranged around the bearing axis. Exhaustive and prolonged road tests demonstrated that the arrangement has decided merit as an improved shock absorbing and suspension system; furthermore the principle is so simple and effective that it may be adapted to more lightly loaded levers, as door closers, hinges for doors, seat windows, exercising machines, lids, etc., and anchorages for levers required to return to neutral positions.

Institution of the Rubber Industry

The final rounds for the Wallwork Golf Cup, the most coveted trophy of the Institution of the Rubber Industry Golfing Society, were played at Dalmahoy near Edinburgh on June 20. Thirteen competitors participated. J. Entwisle won the cup and a replica.

GERMANY

Depression Continues

Reports from the territory covered by the Lower Saxony-Cassel Chambers of Commerce again show a decline in rubber industry activity toward the end of the first quarter of 1932. Because many factories closed in practically every branch of industry in Germany, sales of technical goods have been falling off. The seasonal demand for play balls and articles for acquatic sports remained below all estimates. Export business, of course, is seriously hampered by the various measures taken by foreign countries to protect their own industries, but complaints are also heard that foreign concerns undersell Germans in Germany itself. As it is, the home demand is more than usually limited by the general tendency toward economy, and prices are far from profitable. In fact they have declined somewhat again here and there for soft rubber goods although it has been possible to maintain prices to a certain extent for hard rubber goods. Meantime various concerns in Hannover and nearby districts dismissed more employes and introduced part-time schedules.

News from the elastic webbing centers is not very encouraging. Export business is hampered on all sides by higher tariffs, import quotas, etc. Although in England elastic webbing is no longer dutiable at 50% under the abnormal imports regulations, the duty on these goods, 20% now, is still high enough seriously to obstruct German trade. France has considerably increased taxes and duties on elastic webbing, and Holland has decided to prolong the ruling restricting imports of this kind to March 31, 1933; however whereas the earlier regulation provided that these imports should not exceed 100% of the 1929 and 1930 imports, this condition has been revised to 75% of the average for 1930 and 1931. All these things naturally create further hardship for the German trade.

Apropos of elastic webbing, news of the 2-way stretch elastic introduced in America and used chiefly in the corset industry has reached Germany; so local manufacturers are expected soon to try their hands at this new webbing.

Company Notes

Continental Gummi-Werke A.G. has introduced a new knee-cushion for workmen. Provided with strap and buckle, it is of molded rubber combined with sponge rubber and has an extra square of sponge rubber on the inside for added protection.

Gupol is a liquid polish designed particularly for rubber footwear. The polish, easily applied with a soft brush and then rubbed with a cloth, is said to give a satiny surface, like new, to preserve the elasticity and flexibility of the rubber and to prevent it from becoming brittle.

Czechoslovakia

Kudrnac Rubber Co., Nachod, recently began producing tires, with 5 passenger sizes and one truck size, to be followed shortly by other sizes. Total output now reaches 50 casings daily, but plans call for 300 daily by the end of the year. Kudrnac sells direct to the retail trade and through dealers mainly in the territory surrounding the factory. The company has agreed to maintain prices at the level of those of its chief competitor, Matador, a branch of the Austrian Semperit Co., and its price list has been issued, 10% below prices quoted by distributers representing foreign manufacturers.

Bata tires at last have appeared on the market in 2 sizes of truck casings and tubes made in its Zlin factory and distributed through the 1,969 Bata retail shoe stores.

Italy

An examination of Italy's rubber import and export statistics for 1931 shows a not-unexpected general decline. The consumption of crude rubber was only 102,688 quintals in 1931 against 189,307 in 1930; imports of the most important items, tires and footwear, dropped considerably, and the value of exports declined about 43%.

Regarding imports of pneumatic tires and tubes, which fell from 27,768 quintals, value 45,000,000 lire, to 23,844 quintals value 30,000,000 lire, it is noted that shipments from England and the United States showed substantial reductions whereas those from France and Germany increased. Imports of footwear were only 664,575 pairs instead of 944,882 pairs; toys, 21,154 kilos against 21,599; and fabric-lined hose, 363 quintals instead of 581 quintals.

Among the exports, pneumatic tires and tubes were 64,015 quintals, value 104,000,000 lire, instead of 71,257 quintals, value 147,000,000 lire, a decline caused by decreased purchases by England, France, Dutch East Indies, and Brazil; other important buyers remained practically stationary, but Denmark took 3,260 quintals instead of 1,446 quintals. Exports of rubber thread rose from 1,730 to 2,252 quintals; rubberized fabrics and articles thereof, from 2,799 to 5,145 quintals; but woven and knit elastic goods declined from 1,770 to 1,453 quintals; exports of all other rubber goods increased from 2,873 to 3,684 quintals.

While the above might indicate that the Italian rubber industry is not faring particularly well, this is not the case. Some of the declines are due to the depression; but the drop in imports of footwear and rubberized fabrics, for instance, are not caused by decreased demand but solely by the fact that the Italians are producing these goods in increasing quantities. The production of rubber footwear, particularly rubber-soled canvas shoes, has progressed enormously during 1931 since manufacturers of leather shoes, to make up for loss of trade in their own lines, have taken up this product. They expect soon to be able to supply all local demands and make imports of rubber footwear unnecessary. Similarly manufacturers of rubberized fabrics are making good headway.

Conditions during the current year appear to be improving. Thus the Rome Bureau of Statistics reports for May, 1932, states that of all industries in Italy, the rubber industry is the best occupied. Factories are, on the whole, practically working to capacity; employment during May, 1932, was hardly less than in May, 1931; imports of crude rubber jumped from 34,055 quintals during the first 4 months of 1931 to 43,909 quintals in 1932; sales have risen 30% so far against the preceding year. Tire exports for the first quarter of 1932 were 15,323 quintals, slightly above those for the same period in 1931. The firms producing rubberized and elastic fabrics are the busiest; while much activity is also shown in beach toys.

France

The failure is reported of the Societe Fermiere Industrielle & Commerciale, Neuilly-sur-Seine. The company was capitalized at 1,500,000 francs and manufactured tires, especially the "Automatique Ducasble" cushion tire.

Russia

Production of rubber goods by the 4 concerns of the Resino-Trust, Prowodnik Bogatyr, and Kautschuk, all in Moscow, and Treugolnik in Leningrad, showed another increase which, when compared with that for 1913, indicates a rise of 351%, reflected in the following table:

	Rubles		
Year	Automobile Tires	Technical Goods	Footwear
1913	18,100,000	29,800,000	88,400,000
1926-28 ..	15,800,000	48,500,000	87,500,000
1929-30 ..	51,300,000	92,900,000	141,700,000
1931	110,200,000	174,300,000	193,900,000

Only the best qualities of tires and footwear are exported. Recent improvements in the manufacture of tires, made by Treugolnik, have led to revised mileage guarantees, which are now from 25,000 to 55,000 km., according to size and type of car.

Rubber Industry in Far East

MALAYA

Latex Road-Surfacing

The annual report of the Rubber Research Institute of Malaya for 1931 gives details of rubber road investigations. Results indicate that road compositions from latex in paste form have a marked tendency to crack when the moisture evaporates. Yet a mix may prove excellent when freed from water, but in this state it does not seem possible to apply it on the road. To overcome this difficulty somewhat, the use of concentrated latex was tried. However the uniform incorporation of fillers in the latex was not easy, and the difficulties increased with a thicker paste; then, not only was the latex unstable, but the final result was not much better than that obtained with ordinary latex. When more fillers are added to either concentrated or ordinary latex coagulation may result unless very large quantities of stabilizer are used. Difficulties arise in connection with setting. Apart from this the use of concentrated latex is too expensive. The possibilities of concentrating compounded latex prepared by evaporation have yet to be developed.

Preliminary work has been conducted on the use of latex vulcanized with ultra accelerators as piperidine, pentamethylene dithiocarbamate, zinc pentamethylene dithiocarbamate, etc.

Aleric, a bitumen emulsion, has been used combined with latex. Test strips were laid on the Kuala Lumpur-Port Swettenham road at Petaling Bridge. The proportions were 75% of Aleric and 25% of latex, by volume, as recommended by the inventor. Results were not satisfactory; so a further test on a larger scale using a different method of application was made. Not much can be said of this trial yet, but so far it appears that the mixing of emulsified bitumen with latex yields too thin a product; the surface is too elastic, and the plastic nature of the bitumen is masked so that the layer peels off readily.

Following the favorable report on the "Silent Roadway" experiment carried out by Kendall and Graham at Lahat, when sheets of rubber 1 inch thick containing over 40% of rubber and a cheap filler as kaolin were laid, 3 such pieces were obtained from the makers, the Kinta Rubber Works, Ipoh, and were laid at Petaling New Bridge.

The work on latex containing smaller percentages of mineral showed that such a mix, when creped, could be laminated successfully. Further investigations are now being undertaken to explore the possibilities of more heavily filled latex compositions on the lines adopted for Linatex. With the help of the recently installed mill and the information gained from preliminary work, it is hoped to secure anchorage of a partially coagulated filled material which can be tamped into the road foundation and built up in much the same way as Linatex to form a carpet similar to the silent roadways strips now on trial.

While on the subject of rubber roads, it may be added that a section of prepared road surface about 9 square yards in the heart of Kuala Lumpur recently was covered with the latex-asphalt mixture, Singatexphalt.[1] After the mixture was poured onto the road surface, ½-inch stone chips were scattered over it and rolled with a steam roller.

[1]See INDIA RUBBER WORLD, July 1, 1932, p. 73.

Saving Rubber

Recent issues of the *Straits Times* again bristle with schemes for saving rubber. One writer proposes that every estate be given the opportunity of entering into an undertaking with the government to cease tapping for at least 2 years in return for the remission of quit rent for a similar period.

Another resurrects the central selling and buying schemes.

However, the gem of them all is that inviting the Malayan and the Dutch Governments to unite in raising £20,000,000 to buy up the surplus stocks which are the only obstacles to rubber's upward swing and to burn them. The *Straits Times* ventures to suggest that a difficulty might be caused by the stampede to produce maximum outputs to profit by the inevitable rise in price. One contributor hints that the respective governments might be able to buy only a part of the stocks for their money and promptly offers a remedy—the governments would agree not to buy any rubber if the price went over 3d. per pound. One lone writer thinks that the remedy might prove worse than the disease. Others, however, are captivated by the boldness and rich promise of the scheme.

One admirer of this last plan would improve it by cutting out old and diseased rubber trees on native holdings throughout the East and in compensation would waive arrears or quit rent, etc., and give the natives every encouragement to grow fruit trees, vegetables, etc.

"The danger of flooding the market with surplus rubber again after the present unwanted stocks are taken off and destroyed by 'Progress's' bonfire is thus eliminated because the big producers can thereafter jointly control production."

Incidentally the native, who is not bothering much about tapping old or diseased rubber, might be grateful for the removal of these trees, to say nothing of the arrears that are to be waived or the encouragement to plant food crops, especially as nothing is said about cutting out the good rubber trees. Under these conditions the native would be sitting pretty indeed and would be in a much better condition than ever to compete with the European producer. Here it is well worth quoting the Kuala Lumpur correspondent of the *Straits Budget*:

"The cost of preparing 6 katis of rubber —that is to say the cost of mangle hire and acetic acid—was put down at 4¢ (in the Ulu Langkat district). Therefore the cost for one Kati was less than one 1¢ and if the Malay grower does his own tapping, his actual production cost, allowing for rent and everything else, is not more than 2¢ a kati (1⅓ pounds). Compare that with the European estate f.o.b. cost of 6¢ or thereabouts! . . . an owner of 2 acres can easily tap his own trees and with rubber at 5¢ (Straits currency) a kati, he is still showing a profit of 3 cents . . . What cheaper production unit could be imagined than a Malay holding at Ulu Gombak, within easy reach of a buying center and rail and sea transport, with the trees growing in rich undamaged soil, with their owner doing his own tapping and with his own foodstuffs to fall back upon if rubber becomes unsalable. Not all the bud grafting and organization of Dunlop's is likely to beat that combination."

The above remarks, it should be added, were made to bear out this Kuala Lumpur correspondent's statement that, "Those who, like the chairman of the Dunlop Rubber Co., expect the estate to put the native grower out of business by cutting costs are living, in a fool's paradise."

Speculating in Rubber Estates

It would have been unnatural if the number of British rubber estates originally costing £60 to over £100 per acre which can now be bought for the proverbial song had not failed to attract the speculative investor. Recently an advertisement appeared in *The Times* inviting those with faith in the rubber industry to participate in the purchase of such estates. These estates were not to be tapped immediately, but were to be put on a care and maintenance basis until better times. The advertisers in an interview published in the *Financial Times* estimated the cost of maintenance at £1 per acre per annum, and the eventual yield at 400 pounds per acre per annum. Then with a unit of 1,000 acres, bought for £3 per acre, the total outlay would be £4,500 if no tapping was done for 18 months. If the all-in cost were 4d. per pound, every 1d. per pound over and above this sum would represent 37½% on the money put into the estate. When the price went up still further, there would be no difficulty in selling a few of the

estates at a capital profit which would compensate for the entire initial cost of all estates.

Company News

The London Asiatic Rubber & Produce Co., Ltd., which acquired the assets of the Sepang Rubber Estates, Ltd., as from January, 1931, reports that the amalgamation proved satisfactory. The company is now one of the largest producers in Malaya. Although the average price for the 1931 crop was only 2½d. net and the output was lower than in 1930, the company worked with a smaller loss than the year before. During the past year the smallest estate, besides 2 other divisions, had been closed, and other sections are to be shut down as soon as possible. The estimated crop for 1932 is 5,480,000 pounds, less than 70% of the potential output.

The Kuala Lumpur Rubber Co. proposes to amalgamate with the Sedgeley (F.M.S.) Rubber Co. The capital of the former is to be increased from £250,000 to £300,000 by the creation of 50,000 £1 shares, corresponding to the issued capital of Sedegeley. The Kuala Lumpur Co. has a total acreage of 8,102, of which 6,638 is planted, and Sedegeley, 1,198, of which 1,126 planted. The fact that the Sedgeley areas are, on the whole, much younger than those of the former make them a valuable addition. The location of the estates of both companies favors joint control and economic management.

NETHERLANDS EAST INDIES

Seedling Data

Yield figures from legitimate Hevea seedlings in 1930 in the Soengei Pantjoer Experimental Garden, published by the General Experiment Station of the A. V. R. O. S., concern seedlings from the 1920 crosses, from the isolated seed gardens, and from 1923 crosses.

The tapping results from the 1920 seedlings in the fifth year of tapping were on the whole very satisfactory. From the experimental area of 8.47 hectares (hectare=2.45 acres) on which these seedlings are planted, in all, 7,101.7 kg. of dry rubber were harvested, or 838 kg. per hectare, with only 154 tapped seedlings per hectare. The average yield per tree per tapping was 34.94 gr. and per annum, 5.32 kg. This compares with 534 kg. per hectare per annum produced by 200 illegitimate seedlings whose average yield per tree per annum was 2.67 kg. and per tapping, 17.5 gr. The highest yields were obtained from the families 164 by 161 and 157 by 164, which produced 9.26 and 9.11 kg. per tree, respectively. The first of these two groups includes 55 tappable trees, and the second 65. It is observed that the yields of the best families were not inferior to those of the best clones although there had been no selective thinning.

It is remarked, however, that these very families that excel as high yielders are the most susceptible to Brown Bast. During the 5 years of tapping the total number of trees attacked was 111, 8% of all, and of these 17 belonged to the 157 by 164 family and 17 to the 164 by 161 family. At the end of the fifth tapping year of all the trees tested, that is, 1,387, 63 trees had to be taken out of tapping, while 6 had to be removed altogether. The following year will, therefore, show a loss of about 5% in production because of Brown Bast.

As to the yields of seedlings from isolated seed gardens, an average of 42.6 gr. per tapping was obtained from 11 out of 22 trees of No. 33; 8 by 8 also gave good yields, and new mother trees were selected from this group. Finally the seedlings obtained by artificial pollination also were satisfactory.

Tenth Native Report

The tenth report on native rubber cultivation, which has just been received, details the first quarter of 1932. As was expected, the tendency of the natives to abandon rubber and tap only when urgent need for cash arose has become still more marked. Native exports for the first quarter of 1932 were 15,942 tons, dry weight, against 23,160 in 1931, 25,180 in 930, and 26,207 in 1929. Predictions by leading rubber men that native output for 1932 would not be much above 60,000 tons are, therefore, apparently to be realized.

Exports from the individual districts show that, as compared with the first quarter of 1931, the decrease was: East Coast Sumatra 18%; Atjeh, 80%; Tapanoeli 76%; West Coast Sumatra 97%; Riouw (Indragiri) 3%; Djambi 28%; Palembang 56%; West Borneo 16%; and South and East Borneo 40%.

Of these, Riouw (Indragiri), West Borneo, and East Coast Sumatra show the smallest declines, and these are all districts where the people depend on rubber for cash. Djambi, while still remaining the leading native rubber producing district, shows a fairly considerable decrease because the inhabitants, who until a few years ago depended entirely upon rubber, are turning more and more to the cultivation of food-crops and are taking increasing interest in collecting jungle products. Reduced living expenses are also a factor in this decline in output. However it is expected that as soon as the price reaches about 15 guilder cents per kg. tapping will be resumed on a large scale. It is significant that at the end of 1930 and the beginning of 1931 it was still thought that a price of 25 guilder cents would be necessary to tempt Djambi to produce at maximum rate again.

As before, the report indicates comparatively little loss from fire and disease on the holdings in the different districts, and even cutting out of rubber for food crops only takes place on a limited scale here and there. In most cases the rubber is simply abandoned as there is generally sufficient land available for rice, etc. The one remilling factory at Padang, in the West Coast Sumatra province, destroyed by fire, has not yet been rebuilt.

The Dutch Situation

As J. N. Burger, treasurer of the Verubo, sees it, the situation for the Dutch rubber planting industry is gloomy indeed.

The Verubo, Association of Rubber Producers for Regulating Production, active in attempts to bring about government control of rubber outputs, has not disbanded as the members believe that the time is not far off when the governments will have to take suitable action to rescue the industry.

Recently this association held its annual meeting when Mr. Burger gave some data to show that all was far from well with the Dutch industry. The fall of the pound sterling, he said, had improved Malaya's position considerably and while there could be no talk of a rubber war between that country and the Dutch East Indies, nevertheless output figures indicated a very keen competition.

He further pointed out that in the Dutch colonies 313 estates have entirely and 133 have partly stopped production decreasing Dutch output 18%. During the first 4 months of 1932 Dutch exports were 69,053 tons against 80,551 in the same period of 1931. At this rate the total output for the whole of 1932 would be only 217,000 tons against 256,000 in 1931. For Malaya the output for 1932 is put at 410,000 tons or only 7,000 tons less than the year before. Of course Ceylon's production also showed a big drop and for 1932 is estimated at 46,000 tons, 13,000 less than in 1931.

The situation as far as the Dutch were concerned was considered rather gloomy, for not only had they to reckon with decreased exports and higher exchange rate, but the costs of production in Sumatra were still comparatively high.

On the other hand world production on the basis of the above figures was estimated at 718,000 tons and consumption at 600,000 tons, giving an added surplus of 118,000 tons.

Wages in Bantam

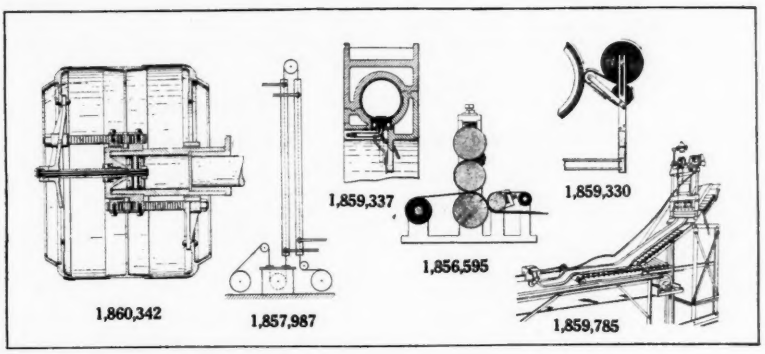
At a meeting of rubber planters in Bantam, Java, it developed that practically everywhere in that section wages have been lowered to such an extent that men now receive 15 guilder cents per daily task of 6 hours, and women 7½ to 10¢, whereas 2 years ago the rates had been 40 to 50¢ The limit has been reached, and no further economies can be made in this direction in order to meet the demands of the directors for still lower production costs.

Tornesit

From the Ninth Annual Report of the International Association for Rubber, for 1931, it is learned that at the instance of the Propaganda Department, a Dutch concern has thoroughly tested Tornesit, the chlorinated rubber[1]. This firm found that paints of a high resistance to acids and lyes could be made with Tornesit as well as lacquers which are considerably harder than oil lacquers and are superior to cellulose lacquers in their resistance to the action of sun-light.

[1] See India Rubber World, Mar. 1, 1932, p. 62, and Oct. 1, 1931, p. 87.

Patents, Trade Marks, Designs



Machinery

United States

1,856,595.* **Color Calendering Mechanism.** This is a device whereby colored strips of thin sheet rubber may be applied upon the surface of a fabric as it emerges from a calender after receiving a basic coating of rubber. The application of previously calendered strips of colored rubber is accomplished by a warm pressure roller over which the strips are guided and by the pressure of which the strips are applied upon the calendered fabric base as it leaves the bottom roll of the calender. J. Stein, Brooklyn, N. Y.

1,857,987.* **Filament Coating Apparatus.** A wire or filamentary material of any sort is guided into a bath of compounded latex or other rubber dispersion contained in a vessel from which it issues through a tube of small aperture by which the adhering coat of rubber is smoothed and centralized. Thence the coated filament passes upward through a drying tube over a pulley and downward through a tubular vulcanizing chamber whence it emerges cured and is rolled up on a reel. D. F. Twiss and E. A. Murphy, both of Birmingham, England, assignors to Anode Rubber Co., Ltd.

1,859,330.* **Gum Strip Applier.** This device displaces the use of books or supply rollers for the gum strip used to cover the edges of the tire carcass plies where they are folded back over the tire bead. The device is essentially a bobbin holder mounted on a support so that it may be adjusted to apply a strip of rubber to either edge of a tire band under construction. As the strip unwinds from the full bobbin, the lines from that one is automatically rewound on an empty bobbin. C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,859,337.* **Inner Tube Vulcanizer.** The object of this invention is to provide means by which the tube and the valve pad may become completely and evenly cured. This work is accomplished by boring the valve section of the mold to permit the insertion of an annular plug provided with a steam chamber and an opening with a bushing. The function of the latter is to hold the valve stem in correct alinement. C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,859,785.* **Tire Tread Cutter.** This machine is designed for automatically skive-cutting different sizes of rubber tire tread stock into lengths to encircle carcasses of given sizes. It is operated by compressed air, but includes electrical means for releasing the cutting knife at predetermined intervals for cutting treads to lengths. L. H. Messinger, Jr., assignor to Black Rock Mfg. Co., both of Bridgeport, Conn.

1,860,342.* **Telescopic Tire Drum.** This drum by its telescopic feature permits the tire to be removed without contracting the drum radially. It is also readily adjustable and adaptable for the manufacture of tires of varying cross-sectional diameters with common bead diameters. A. L. Heston, Columbiana, assignor to National Rubber Machinery Co., Akron, both in O.

1,860,409. **Shears.** J. H. Flink, Watertown, Mass., assignor, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,860,410. **Expanding Pulley.** F. D. Fowler, Newton, Mass., assignor, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,860,411. **Rubberized Fabric Vulcanizer.** A. A. Glidden, T. M. Knowland, and W. R. Dow, all of Watertown, Mass., assignors, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,860,412. **Footwear Mold.** A. A. Glidden and T. M. Knowland, both of Watertown, Mass., assignors, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,860,429. **Plastic Material Mold.** J. E. Perrault, Watertown, Mass., assignor, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,861,673. **Gas Mask Molding Device.** D. F. Wilhelmi, assignor to Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, both of Heveadorp, the Netherlands.

1,861,686. **Incorporating Sock Linings in Shoes.** J. Cavanagh, Cohasset, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,862,024. **Tire Builder.** C. W. Leguillon and N. L. Warner, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,862,025. **Vulcanizer.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,862,040. **Strip Shaper and Winder.** J. O. Small, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,862,210. **Inner Tube Apparatus.** W. H. Campbell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,862,334. **Stock Fabricating Machine.** H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.

1,862,490. **Belt Making Device.** W. H. Gerstenslager, assignor to Goodyear Tire & Rubber Co., of Akron, O.

1,862,498. **Weftless Cord Fabric Apparatus.** W. W. Stephens, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,862,655. **Tire Core.** H. C. Bostwick, assignor to Akron Standard Mold Co., both of Akron, O.

1,862,749. **Artificial Leather Treating Device.** R. B. Hill, Berlin, N. H., and J. A. Fogarty, Portland, Me., assignors to Brown Co., Berlin, N. H.

1,862,947. **Tubing Machine.** W. S. Smith, Newton Poppleford, H. J. Garnett, Solefields, and J. N. Dean, Orpington, all in England.

1,863,035. **Tennis Ball Propelling Device.** T. Stuart, assignor, by direct and mesne assignments, of ½ to Dunlop Rubber Co., Ltd., both of Birmingham, England, and ½ to J. R. Lacoste, Seine, France.

1,863,189. **Ruching Maker and Applier.** A. E. Collins, Cuyahoga Falls, O., assignor, by mesne assignments, to Miller Rubber Co., Inc., Wilmington, Del.

1,863,199. **Press.** F. D. Fowler, Newton, Mass., assignor to B. F. Goodrich Co., New York, N. Y.

1,863,201. **Vulcanizer.** F. L. Johnson, Akron, O.

1,863,209. **Molded Article Device.** McC. Shank, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,863,339. **Hollow Article Vulcanizer.** W. E. Humphrey, Jeannette, Pa., assignor to Pennsylvania Rubber Co., a corp. of Pa.

1,863,469. **Leather Substitutes.** J. J. Clifford, Reading, Mass., assignor, by mesne assignments, to Stedfast Rubber Co., Inc., a corp. of Mass.

1,863,604. **Vulcanizing Mold.** P. De Mattia, Passaic, N. J., assignor, by mesne assignments, to National Rubber Machinery Co., Akron, O.

1,863,757. **Thickness Gage.** C. S. McChesney, Kenmore, assignor to Dunlop Tire & Rubber Corp., Buffalo, both in N. Y.

1,863,764. **Tire Machine.** W. G. Prentice, Indianapolis, Ind., assignor to Elite Mfg. Co., Ashland, O.

* Pictured in group illustration.

1,863,900. **Foxing Cementing Machine.** S. J. Finn, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.
1,863,954. **Producing Hot Vulcanized Footwear.** D. F. Wilhelmi, Oosterbeek, Netherlands.
1,864,001. **Tire Valve Sealing Means.** D. H. Spicer, Lakewood, O.
1,864,071. **Grinder.** W. J. Kent, Brooklyn, N. Y., assignor to Mechanical Rubber Co., Chicago, Ill.
1,864,155. **Tire Bead Reenforcer.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.
1,864,478. **Pile Fabric Apparatus.** E. H. Ward, E. Orange, assignor to Lea Fabrics, Inc., Newark, both in N. J.

Dominion of Canada

322,865. **Lasting Machine.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. L. Patten, New Haven, Conn., U. S. A.
322,876. **Vulcanizing Heater.** General Tire & Rubber Co., assignee of H. A. Denmire, both of Akron, O., U. S. A.
323,080. **Extruder.** Goodyear Tire & Rubber Co., Akron, O., assignee of A. A. Nichols, Waltham, Mass., both in the U. S. A.
323,097. **Clothes Line Die.** Magic Clothes Line Co., Inc., assignee of F. E. Bankwitz, both of Parkersburg, W. Va., U. S. A.
323,345. **Sole Laying Machine.** United Shoe Machinery Co. of Canada, Ltd., Montreal, P. Q., assignee of W. Wardle, Leicester, England.
323,497. **Tacky Material Treating Device.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of W. C. MacFarlane, S. Gate, Calif., U. S. A.
323,541. **Winder.** Sibley-Pym Corp., Lynn, Mass., assignee of C. R. Sibley, Lake Mary, Fla., both in the U. S. A.

United Kingdom

365,548. **Rubber Goods Mold.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Guernsey, E. A. Murphy, E. W. B. Owen, and D. F. Twiss, all of Birmingham.
368,295. **Dipped Article Mold.** J. R. Gammeter, Akron, O., U. S. A.
368,434. **Tire Collapsible Core.** R. T. Cooke, Manchester. (F. L. Johnson, Akron, O., U. S. A.)

Germany

552,803. **Tire Tool.** A. Pohl, Berlin-Lichterade.
552,805. **Tire Pressure Device.** H. Markiewicz, Berlin-Grunewald.
553,468. **Cycle Tire Vulcanizer.** Max Muller Maschinen & Formenfabrik, Hannover-Hainholz.
554,028. **Heat Molds Electrically.** P. Klein, S. Gotleb, Ungarische Gummiwarenfabriks A. G., all of Budapest, Hungary. Represented by C. Clemente, Berlin.

Process

United States

1,860,970. **Hollow Composite Article.** D. F. Twiss and E. A. Murphy, both of Birmingham, England, assignors to Dunlop Rubber Co., Ltd., a British company.
1,861,589. **Bottle Closure.** A. H. Warth, Baltimore, Md., assignor to Crown Cork & Seal Co., Inc., New York, N. Y.
1,861,945. **Composite Insulator.** H. L. Ward, Chicago, Ill., assignor to Western Electric Co., Inc., New York, N. Y.
1,862,046. **Reducing Garment.** T. A. Bennett, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,862,259. **Thread Core for Dyeing.** C. K. Dunlap, Hartsville, S. C.
1,862,314. **Inner Tube.** L. A. Laursen, assignor of ¼ to P. L. Laursen, both of Akron, O.
1,862,492. **Tire.** G. D. Mallory, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,862,504. **Viscose-Latex Coated Fabric.** W. C. Calvert, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,862,633. **Perforating Sheet Rubber.** A. Ramsay, assignor to Hendrick Mfg. Co., both of Carbondale, Pa.
1,862,645. **Porous Ebonite Bodies.** M. Wilderman, London, England, assignor, by mesne assignments, to American Wilderman Porous Ebonite Co., Inc., Philadelphia, Pa.
1,862,740. **Molded Article.** T. A. Edison, assignor to Thomas A. Edison, Inc., both of W. Orange, N. J.
1,863,517. **Smudge Brick.** W. D. White, Ocala, Fla.

Dominion of Canada

322,777. **Rubber Goods Label.** J. R. Foley, New York, N. Y., U. S. A.
322,778. **Tire Mileage Indicator.** J. R. Foley, New York, N. Y., U. S. A.
323,075. **Casing.** Goodyear Tire & Rubber Co., Akron, assignee of A. J. Musselman, Cuyahoga Falls, both in O., U. S. A.
323,233. **Reenforcing Insoles.** Boston Blacking Co. of Canada, Ltd., Montreal, P. Q., assignee of E. A. Ellis, Medford, Mass., U. S. A.
323,260. **Rubber and Fibrous Article.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Hopkinson, New York, N. Y., and W. A. Gibbons, Montclair, N. J., co-inventors, both in the U. S. A.
323,496. **Water Bag Antideterioration.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of E. T. Handley, Akron, O., U. S. A.

United Kingdom

367,104. **Threads from Dispersions.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Guernsey, and E. A. Murphy, Birmingham.
367,176. **Brake Lining Composition.** World Bestos Corp., Paterson, assignee of W. Nanfeldt, Clifton, both in N. J., U. S. A.
367,264. **Mosaic Flooring.** Linoleum Mfg. Co., Ltd., and A. A. Godfrey, both of London.
367,305. **Vulcanizing Hard Rubber.** B. F. Goodrich Co., New York, N. Y., assignee of G. Oenslager, Akron, O., both in the U. S. A.
367,317. **Leather Substitute.** S. Yamamoto, Tokio, Japan.
367,364. **Carpet Strips.** Collins & Aikman Corp., Philadelphia, Pa., assignee of P. H. Chance, Montclair, N. J., both in the U. S. A.
367,649. **Electric Insulating Composition.** British Thomson-Houston Co., Ltd., London, assignee of E. W. Schwartz, Bridgeport, Conn., U. S. A.
367,710. **Mudguard.** Tingley-Reliance Rubber Corp., Rahway, N. J., U. S. A.
367,811. **Cellular Articles.** Soc. Belge Du Caoutchouc-Mousse, Berchem-Ste-Agathe, Belgium.

Germany

553,651. **Artificial Threads or Tubes.** M. Hessenland, Konigsberg, Prussia.
554,334. **Covering Bodies with Rubber.** K. D. P., Ltd., London, England. Represented by F. Cochlovius, Frankfurt a. M.

Chemical

United States

1,860,434. **Age Resister.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,861,987. **Accelerator.** G. H. Stevens. Newark, N. J.
1,862,270. **Age Resister.** G. Källner, assignor to "Silesia" Verein Chemischer Fabriken, both of Jdaund Marienhutte, Germany.
1,863,834. **Composition.** C. Coolidge and H. S. Holt, assignors to E. I. du Pont de Nemours & Co., all of Wilmington, Del.
1,864,067. **Age Resister.** L. H. Howland, Passaic, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

Dominion of Canada

323,077. **Preservative Coating.** Goodyear Tire & Rubber Co., assignee of G. D. Mallory, both of Akron, and W. C. Calvert, Cuyahoga Falls, all in O., U. S. A.
323,078. **Compound.** Goodyear Tire & Rubber Co., assignee of H. A. Endres, both of Akron, O., U. S. A.
323,351. **Compound.** World Bestos Corp., Paterson, assignee of W. Nanfeldt, Clifton, both in N. J., U. S. A.
323,367. **Compound.** G. W. Bennett, Cincinnati, O., U. S. A.

United Kingdom

367,183. **Rubber Plasticator.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of W. A. Gibbons, United States Rubber Co., Passaic, N. J., both in the U. S. A.
367,352. **Accelerators.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)
367,378. **Compound.** J. T. Shevlin, London. (Soc. Italiana Pirelli, Milan, Italy.)
367,494. **Age Resister.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
367,840. **Accelerators.** Rubber Service Laboratories Co., Akron, O., assignee of O. Behrend, Nitro, W. Va., both in the U. S. A.
367,851. **Compound.** W. S. Smith, Newton Poppleford, H. J. Garnett, Lymne, and J. N. Dean, Orpington.
367,901. **Accelerators.** Imperial Chemical Industries, Ltd., London, M. Jones, and W. J. S. Naunton, both of Manchester.
368,236. **Composition.** Bosch A. G., Stuttgart, Germany.
368,422. **Rubber Colors.** Deutsche Hydrierwerke A. G., Berlin, Germany.
368,509 and 368,510. **Accelerators.** Soc. Italiana Pirelli, Milan, Italy.

Germany

553,012. **Reclaiming.** O. Zeller, Hamburg.
554,335. **Reclaiming Fibers from**

Fabrics. D. F. Wilhelmi, Heveadorp, Netherlands. Represented by R. Schmehlik and C. Satlow, Berlin.

Latex

United States

1,860,651. **Leather Waterproofing.** C. E. Bradley and C. D. Mason, assignors to Mishawaka Rubber & Woolen Mfg. Co., all of Mishawaka, Ind.

1,861,407. **Bituminous Composition.** A. C. Fischer, Chicago, Ill., assignor to Philip Carey Mfg. Co., a corp. of O.

1,862,061. **Purifying Aqueous Dispersions.** E. B. Newton, Akron, O., assignor to American Anode, Inc., New York, N. Y.

1,864,044. **Latex Treatment.** E. Hazell, New York, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,864,060. **Latex Treatment.** W. A. Gibbons, Montclair, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,804,078. **Latex Products.** M. Luther, Mannheim, and C. Heuck, Ludwigshafen a. R., assignors to I. G. Farbenindustrie A.G., Frankfurt a. M., all in Germany.

Dominion of Canada

323,079. **Composition.** Goodyear Tire and Rubber Co., assignee of H. A. Endres, both of Akron, O., U. S. A.

United Kingdom

368,193. **Latex Preservative Process.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of J. McGavack, Leonia, N. J., both in the U. S. A.

General

United States

1,860,362. **Tire Safety Buffer.** L. L. Jones, Oradell, N. J.

1,860,403. **Molded Boot.** L. H. Burnham, Lexington, Mass., assignor, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,860,588. **Tire Pressure Gage.** L. S. Morse, Ocean Park, Calif.

1,860,609. **Inflatable Boat.** J. D. Clarke, W. Haven, Conn.

1,860,654. **Running Board.** G. F. Cavanagh, assignor to Ohio Rubber Co., both of Cleveland, O.

1,861,053. **Cushion Shackle.** J. Dykstra, Lansing, assignor to General Motors Corp., Detroit, both in Mich.

1,861,094. **Caster.** C. A. Schacht, Huntington, Ind.

1,861,095. **Caster Cup.** C. A. Schacht, Huntington, Ind.

1,861,102. **Valve Stem Patch.** W. F. Teer, Bucklin, Kan.

1,861,182. **Electric Conductor.** F. Hendey and J. P. Milwood, assignors to Okonite Co., all of Passaic, N. J.

1,861,211. **Coupling.** J. R. Gammeter, Akron, O.

1,861,234. **Recoil Pad.** W. W. Knight, assignor to Roth Rubber Co., both of Cicero, Ill.

1,861,276. **Tire.** K. B. Kilborn, Fairlawn, assignor to Seiberling Rubber Co., Barberton, both in O.

1,861,389. **Bath Mat.** J. E. Grosjean, Lima, O.

1,861,390. **Crank Shaft Vibration Dampener.** E. G. Gunn, assignor, by mesne assignments, to Packard Motor Car Co., both of Detroit, Mich.

1,861,430. **Running Board.** B. Bronson, assignor to Ohio Rubber Co., both of Cleveland, O.

1,861,663. **Laminated Plastic Material.** F. T. Lahey, Monroe, N. Y.

1,861,669. **Head Covering.** M. E. Van Sickle, Toronto, Ont., Canada.

1,861,674. **Ball Valve Casing.** A. Winterhoff, Dusseldorf, Germany.

1,861,695. **Horseshoe.** P. Harsem, Oslo, assignor to Imperator Hestesko Aktieselskap, Tonsberg, Norway.

1,861,791. **Oscillating Pivot Joint.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,861,792. **Steering Wheel.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,861,879. **Sole.** G. F. Quinn, Beachmont, Mass.

1,861,936. **Tire Valve.** M. J. Payne, assignor to Payne Valve Corp., both of Staunton, Va.

1,861,985. **Weatherstrip.** W. A. Smith, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,862,080. **Central Buffing and Drawgear.** R. T. Glascodine, London, England.

1,862,153. **Pipe Joint.** R. K. Lee, assignor to Chrysler Corp., both of Detroit, Mich.

1,862,160. **Tire Valve Insert.** C. S. Preston, San Diego, Calif.

1,862,218. **Dual Pneumatics.** G. A. Handy, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,862,242. **Tire Deflation Switch.** F. Schwien, Berlin, Germany.

1,862,269. **Tire.** P. H. Johnson, assignor to Roadless Traction, Ltd., both of Hounslow, England.

1,862,285. **Gasket.** M. C. Terry, Mansfield, O., and H. E. Pleasant, Rockford, Ill., assignors to Westinghouse Electric & Mfg. Co., a corp. of Pa.

1,862,473. **Tire Switch Element.** J. R. Fitzgerald, Harlingen, Tex., assignor of ⅛ to O. F. Bakhaus, Castle, Okla.

1,862,483. **Automobile Engine Mounting.** H. C. Lord, Erie, Pa.

1,862,484. **Mounting.** T. Lord and I. P. Whitehouse, assignors to H. C. Lord, all of Erie, Pa.

1,862,693. **Tire.** J. V. Martin, Garden City, N. Y.

1,862,708. **Practice Golf Ball.** L. F. Rosenberg, Providence, R. I.

1,862,904. **Ball and Projector.** H. C. Pearson, Pasadena, Calif.

1,863,031. **Tire.** H. F. Schippel, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,863,081. **Bottle Cap.** E. S. Bellows, assignor to Huntington Rubber Mills, both of Portland, Ore.

1,863,119. **Inflatable Body Locking Device.** J. F. L. Marren, Philadelphia, Pa.

1,863,170. **Football.** M. Scudder, Clayton, assignor to Rawlings Mfg. Co., St. Louis, both in Mo.

1,863,219. **Refrigerator.** G. C. Bohn, St. Paul, Minn.

1,863,283. **Nursing Bottle.** A. E. Rogers, Arlington, Calif.

1,863,370. **Resilient Connection.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,863,697. **Brassiere.** G. E. Rutledge, assignor to Vassar Swiss Underwear Co., both of Chicago, Ill.

1,863,709. **Paper Folding Machine.** C. S. Beall, Raymond, Wash.

1,863,939. **Wing Mounting Clamp.** V. G. Souder and H. B. Trix, assignors to American Injector Co., all of Detroit, Mich.

1,864,050. **Fountain Pen.** H. A. Myers, Toledo, O.

1,864,080. **Nonmetallic Connection.** N. G. Madge, Providence, R. I., assignor to Mechanical Rubber Co., Cleveland, O.

1,864,150. **Motor Insulator.** J. W. Shields, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,864,200. **Pail Protector.** H. L. Kaufmann, Newton, Mass.

1,864,345. **Elastic Strand.** W. J. Fox, assignor to James R. Kendrick Co., Inc., both of Philadelphia, Pa.

1,864,456. **Fender Splash Guard.** W. McCollum, assignor to Tingley Reliance Rubber Corp., both of Rahway, N. J.

1,864,476. **Bathing Suit.** G. E. Rutledge, assignor to Vassar Swiss Underwear Co., both of Chicago, Ill.

Dominion of Canada

322,907. **Composite Article.** Ohio Rubber Co., assignee of B. Bronson, both of Cleveland, O., U. S. A.

322,945. **Nipple.** C. W. Meinecke, E. Orange, N. J., assignee of H. A. Reisman, Jamaica, N. Y., both in the U. S. A.

322,990. **Fuel Feeding Device.** D. A. Gauthier, Detroit, Mich., U. S. A.

323,028. **Pipe.** G. E. Strandt, Milwaukee, Wis., U. S. A.

323,081. **Tire Bead and Casing.** Goodyear Tire & Rubber Co., assignee of J. C. Warden, both of Akron, O., U. S. A.

323,082. **Tire Bead.** Goodyear Tire & Rubber Co., assignee of G. D. Mallory, both of Akron, O., U. S. A.

323,163. **Shoe Antislipping Device.** W. H. Bird, Wanganui, New Zealand.

323,185. **Toilet Seat.** J. J. Flynn, Pittsburgh, Pa., U. S. A.

323,298. **Adhesive Tape.** Minnesota Mining & Mfg. Co., assignee of R. G. Drew, both of St. Paul, Minn., U. S. A.

323,302. **Telephone Magnet System.** Radio Corp. of America, New York, N. Y., U. S. A., assignee of F. H. Mulder, Groningen, Holland.

323,317. **Adhesive Tape.** Minnesota Mining & Mfg. Co., assignee of R. G. Drew, both of St. Paul, Minn., U. S. A.

323,418. **Sliding Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of H. E. Sipe, New York, N. Y., U. S. A.

323,492. **Hood Corner Protector.** Duffy Mfg. Co., assignee of J. F. Duffy, both of Holland, Mich., U. S. A.

323,579. **Nipple.** F. Brown, Philadelphia, Pa., U. S. A.

United Kingdom

365,496. **Shaving Brush.** E. Seykora, Vienna, Austria.

365,516. **Spring.** Chrysler Corp., Detroit, Mich., U. S. A.

365,631. **Hair Waver.** G. Kilchhofer, Zürich, Switzerland.

365,644. **Boot Stiffener.** British United Shoe Machinery Co., Ltd., and L. P. Mellerio, both of Leicester.

365,656. **Sole.** A. Bannister, Cheshire.

365,688. **Tank Cushioning Ring.** J. F. Horle and Motor Services (London), Ltd., both of London.

365,706. **Tooth Cleaning Device.** A. J. Mayes, Peterborough.

365,729. **Corset.** J. T. P. Rowland and Leethems (Twilfit), Ltd., both of Portsmouth.

365,773. **Shock Absorber.** C. H. Bun-

clark, Surrey, and L. R. Homewood, London.

365,986. **Sole.** L. Mellersh-Jackson, London. (Naamloo e ennoots-hap Holland Rubber Fabriek Radium, Maastricht, Holland.)

365,990. **Boot Protector.** Redfern's Rubber Works, Ltd., Cheshire, and F. R. Stow, Glasgow, Scotland.

366,012. **Compound Sheet Material.** C. A. Beldam, London.

366,280. **Arch Support.** F. W. Holland, London.

366,406. **Shock Absorber.** Soc. Italiana Pirelli, Milan, Italy.

366,430. **Filter Press.** M. Wilderman, Rue Bosio, Monte Carlo.

366,639. **Bottle Cap.** Crown Cork & Seal Co., Inc., assignee of A. H. Warth, both of Baltimore, Md., U. S. A.

366,651. **Road Surface Marker.** H. J. Haynes, Portsmouth.

366,719. **Cable.** Pirelli-General Cable Works, Ltd., London, and J. L. Bishop, Southampton.

366,911. **Conveyer Cloth.** W. Zänker, Barmen, Germany.

365,832. **Flywheel Vibration Damper.** Packard Motor Car Co., Detroit, Mich., U. S. A.

366,019. **Elastic Fabric.** W. Halstenbach, H. Plutte, and C. Rosenkranz, (trading as Halstenbach & Co.), all of Barmen, Germany.

366,370. **Hose Pipe.** E. Schulthess, S. Orange, N. J., U. S. A.

366,397. **Spring.** Etablissements C. Faure-Roux, Loire, France.

366,546. **Artificial Fiber Stapling Device.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

366,579. **Bathing Cap.** P. B. Cow & Co., Ltd., and C. Renton-Coomber, both of London.

366,636. **Tire.** Dunlop Rubber Co., Ltd., London, and R. Truesdale, Ft. Dunlop.

366,685. **Shoe Protector.** G. F. Hutchings & Co., Ltd., and R. W. Hutchings, both of Bristol.

366,694. **Boot.** H. C. L. Dunker, Helsingborg, Sweden.

366,984. **Coupling.** J. Lucas, Ltd., and F. H. Leffler, both of Birmingham.

367,034. **Tire Valve Extension.** Michelin Et Cie, Puy-de-Dome, France.

367,057. **Vehicle Suspension System.** W. W. Hamill, Sutton Coldfield.

367,098. **Window Channel Strip.** A. S. Roberts, Birmingham.

367,103. **Driving Belt.** A. L. Freedlander, Dayton, O., U. S. A.

367,344. **Tire Valve Dust Cap.** Alligator Ventilfabrik, Abteilung Der M. Steiff Ges. and O. Steiff, both of Wurtemberg, Germany.

367,395. **Collapsible Tube.** W. H. Naugle, London, (N. Statham, New York, N. Y., U. S. A.)

367,404. **Furniture Leg Tips.** F. Jantzen, Bronx, N. Y., and J. J. Lynch, Jersey City, N. J., both in the U. S. A.

367,435. **Submarine Cable.** W. S. Smith, Devon, H. J. Garnett, Sevenoaks, and J. N. Dean, Orpington.

367,527. **Hot Water Bottle.** Leyland & Birmingham Rubber Co., Ltd., Leyland, and G. A. Pattinson, London.

367,814. **Submarine Cable.** Siemens-Schuckertwerke A. G., Berlin, Germany.

367,949. **Submarine Cable Joint.** Felten & Guilleaume Carlswerk A. G., Cologne, Germany.

367,986. **Galvanic Battery.** M. and P. Wilderman, both of Rue Bosio, Monte Carlo.

368,072. **Insulation.** International General Electric Co., Inc., New York, N. Y., U. S. A., assignee of Allgemeine Elektricitäts Ges., Berlin, Germany.

368,150. **Fountain Pen.** L. R. Yokoyama, New York, N. Y., U. S. A.

368,374. **Cable Conduit.** R. C. Schemmel, Union City, Ind., U. S. A.

369,028. **Safety Glass Press.** Duplate Corp., Pittsburgh, assignee of J. H. Sherts, Brackenridge, both in Pa., U. S. A.

Germany

552,256. **Footwear.** Gummi & Maschinenfabrik Zurich A. G., Altstetten, Zurich, Switzerland. Represented by F. Keunecke, Wuppertal-Barmen.

552,653. **Footwear.** J. Gaillart, Marseilles, France. Represented by E. Prinz, Berlin.

Designs

1,213,504. **Syringe.** F. Kibele, Weissenfels a. d. S.

1,213,833. **Anti-skid Device.** F. Kuhnle, Dusseldorf.

1,213,840. **Battery Containers.** Accumulatoren-Fabrik A.G., Berlin.

1,214,096. **Sole.** E. Tempel, Hainewalde b. Zittau i. Sa.

1,214,170. **Stamp.** B. Mulde, Bremen.

1,214,532. **Nipple.** Gustav Wellmann G. m. b. H., Hannover-Hainholz.

1,214,558. **Pacifier.** F. Hahn, Munich.

1,214,569. **Violin Pad.** K. Brunn, Berlin-Wilmersdorf.

1,214,649. **Glass Brush.** Continental Gummi-Werke A. G., Hannover.

1,214,715. **Saucer.** F. Hahn, Munich.

1,214,766. **Wringer Roll.** Mielewerke A. G., Gutersloh i. W.

1,215,178. **Rubber Cover for Conduction Parts.** Kabelfabrik A. G., Pressburg, Czechoslovakia. Represented by C. Grunberg.

1,215,633. **Nonskid Shoe for Stands.** R. Gassen, Dusseldorf.

1,215,746. **Heel.** Romika Schuhfabrik A. G., Koln-Nippes.

1,215,901. **Milk Bottle Closure. G.** Wellmann G. m. b. H., Hannover-Hainholz.

1,216,109. **Cell Cover for Accumulators.** C. Muller Gummiwaarenfabrik A. G., Berlin-Weissensee.

1,216,657. **Syringe.** Neumann & Cie., Cologne.

1,216,866. **Sole.** Continental Gummi-Werke A. G., Hannover.

1,216,809. **Sponge Bath Brush.** A. Menz, Berlin.

1,217,126. **Apron.** G. Levinstein, Berlin.

1,217,211. **Chair Frame with Rubber Strips.** J. Sommer & Cie., Dusseldorf.

1,217,319. **Gun Stock Cover.** H. Seeberger, Neuss a. Rh.

1,217,702. **Inflatable Balloon.** Veritas Gummi-werke A. G., Berlin-Lichterfelde-Ost.

1,217,916. **Mask.** P. Best, Wiesbaden.

1,218,199. **Hip Protector.** Firma Else Undeutsch, Pausa i. Vogtl.

1,218,200. **Elbow Protector.** Firma Else Undeutsch, Pausa i. Vogtl.

1,218,225. **Tennis Ball.** Continental Gummi-Werke A. G., Hannover.

1,218,226. **Tennis Ball Cover.** Continental Gummi-Werke, A. G., Hannover.

1,219,724. **Chlorinated Rubber Body.** New York Hamburger Gummi-Waaren Co., Hamburg.

Trade Marks

United States

294,269. **Plazit.** Applicator. Old Dominion Drug Co., Inc., Dover, Del.

294,494. **Free Wheeler.** Heels and soles. Endicott Johnson Corp., Endicott, N. Y.

294,521. **Atlas Free Wheeling.** Tires and tubes. Atlas Supply Co., Wilmington, Del.

294,568. Diamond containing the word: **"Benefactor."** Footwear. Montgomery Ward & Co., Inc., Chicago, Ill.

294,627. **Foot-Snugger.** Shoes. P. Sullivan Shoe Co., Cincinnati, O.

294,665. **Dozit.** Tire repair devices. Buckeye Reliner Producing Co., Lima, O.

294,696. Representation of a key bearing the word: **"Waterlox."** Waterproofing compound. Waterlox, Inc., Detroit, Mich.

294,731. **Zero.** Tires. B. F. Goodrich Co., New York, N. Y.

294,854. Representation of a tread bearing the words: **"Tuff Tred."** Footwear. Endicott Johnson Corp., Endicott, N. Y.

294,857. **Duncan MacRae, First Flight Model.** Footwear. Collingswood Shoe Co., Inc., Endicott, N. Y.

294,870. **Tudor.** Combs. J. Schmid, New York, N. Y.

294,887. **Aqua-Pello.** Shower curtains. Lesher, Whitman & Co., Inc., New York, N. Y.

294,909. **Manfield.** Footwear. Manfield & Sons, Ltd., Northampton, England.

294,953. Label bearing the words: **"Blue Ribbon."** Prophylactic articles. Blue Ribbon Rubber Co., Baltimore, Md.

294,956. **Tudor.** Douche syringes. J. Schmid, New York, N. Y.

295,024. **Sheik.** Prophylactic articles. J. Schmid, New York, N. Y.

295,032. **Honeysuckle.** Dolls. Ideal Novelty & Toy Co., Brooklyn, N. Y.

295,103. **Millay.** Clothing. Hahn Department Stores, Inc., Wilmington, Del.

295,163. Representation of a package of rubber bands and the words: **"A. W. Faber, U. S. A."** Rubber bands. A. W. Faber, Inc., Newark, N. J.

295,199. Representation of 2 women and the words: **"Sherwood, Beauty Arch."** Footwear. Sherwood Shoe Co., Rochester, N. Y.

295,222. Representation of a castle and armor and the word: **"Windsor."** Prophylactic articles. J. W. York, New York, N. Y.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	Inquiry
1499	Manufacturer of machines used in manufacturing friction tape and adhesive plaster.
1500	Manufacturer of rubber coin mats.
1501	Manufacturer of hollow rubber balls 1 1/16 and 1 1/8 inches in diameter.
1502	Manufacturer of rubber quoits.
1503	Source of supply for a vulcanized rubber solution.
1504	Manufacturer of rubber footwear varnishing machine.
1505	Source of detailed information on the most modern method of rubber lining wooden and metal tanks.

LEGAL

Patent Suit

Golf Balls. No. 2,868. Madge and Doyle v. Commissioner of Patents.

In the case of Madge and Doyle their claims for a method of making golf balls is held unpatentable over the prior art. The U. S. Court of Customs and Patent Appeals affirmed the decision of the Board of Appeals of the United States Patent Office, denying all of the claims, 1 to 17 inclusive, in the appellants' application for an alleged invention relating to golf balls and to a method of making them. Quoting from the opinion: "Appellants' method of making golf balls comprises, first, applying to a core a cover of a balata compound containing an alkaline carbonate; second, subjecting the cover to an intensive sulphur monochloride cure, and, third, the elimination of excess sulphur monochloride by the application of 'ammonia water or a caustic solution and then pure water,' etc. . . .

"That appellants' claimed process is new and produces a superior product, may be admitted. It does not follow, however, that invention is present. Each step in the process is plainly suggested by the prior art, and, in our opinion, nothing more than the exercise of mechanical skill was required to produce appellants' process.

"We concur in the conclusion reached by the patent office tribunals that the involved claims, process and product, are unpatentable. Accordingly, the decision of the Board of Appeals is affirmed." *Official Gazette*, Vol. 419, p. 565.

Treasury Decision

Hard Rubber Dust. No. 45,706, June 2, 1932, rules that hard rubber dust properly comes within the provision in paragraph 1537 (b) for: manufactures composed wholly or in chief value of India rubber known as "hard rubber," not specially provided for, finished or unfinished, 35 per centum ad valorem.

It has been the practice of the appraiser at New York to classify hard rubber dust as waste rubber, free of duty and as coming within the scope of Treasury Decision 31,544.

The Commissioner of Customs holds that the process of grinding hard rubber to dust is a step in the manufacture of scrap rubber into complete articles and ruled that the duty indicated above shall be assessed on all shipments entered for consumption after July 9, 1932.

Paravar

Paravar is a flexible varnish suitable for varnishing rubber balls, toys, etc. It is a solution of chlorinated rubber and was developed primarily for industrial protective purposes such as coating tanks used for containing various active reagents and for the protection of structural members, etc. Its value varies considerably with the specific conditions under which it is used.

EDITOR'S BOOK TABLE

Book Reviews

"Colloid Chemistry, Theoretical and Applied." By Selected International Contributors Collected and Edited by Jerome Alexander. Vol. IV. Second Series of Papers on Technical Applications. The Chemical Catalog Co., Inc., 419 Fourth Ave., New York, N. Y., 1932. Cloth, 734 pages, 6 by 9 inches. Illustrated. Indexed. Price $11.50.

The series of which this book is the concluding volume has been justly designated as the most comprehensive and modern treatment of colloid chemistry in any language. The scope of this volume embraces comprehensive articles in the following industrial fields: carbohydrates, including cellulose, wood, paper, explosives, sugar, starch products, sizing, dyeing, rubber, plastics, tanning, photography, coatings, including paints, color lakes, and electrodeposition, foods, laundry and dry cleaning, solidified alcohol, and fire extinguishers, water supply and sewage disposal.

The section devoted to rubber comprises 4 chapters as follows: Latex and Its Industrial Applications by A. van Rossem; Structure of Rubber by E. B. Spear; Physico-Chemical Aspects of Hevea Rubber by R. P. Dinsmore; and Carbon Black in Rubber by N. A. Shepard. In these chapters the authors present the facts and theories thus far revealed by researches and technical processes on the chemical and physical constitution of rubber and its properties. Each chapter is supplemented by an extensive bibliography for further guiding the interested student to the original sources.

The series of 4 volumes is a work of great magnitude and high practical value to chemists and students in many branches of science and technology.

"New and Improved Rapid Flat Rate and Repair Data." 7th Edition. Chilton Class Journal Co., Chestnut and 56th Sts., Philadelphia, Pa. Cloth, 833 pages, 7 by 10 inches. Indexed. Illustrated. Price $4.

This monumental compilation of repair data covers labor and material prices indexed and tabulated for every make and model of American built automobile. The work is prefaced by a page of instructions on how to utilize the tables for the information sought. The volume presents an accurate and invaluable help to all persons interested in the construction and repair of automobiles.

Rubber Shoe Lasts

Advocates of rubber footwear abroad are urging the adoption of rubber lasts for custom-made shoes. The molds are made in plaster of customers' feet with the lasts of heavily compounded rubber, which should afford perfect models of pedal extremities and be practically indestructible, but which could even be reclaimed; whereas old wooden lasts are burned.

New Publications

"Zinc Oxide Incorporation in the Banbury Mixer." The New Jersey Zinc Co., 160 Front St., New York, N. Y. The information assembled in this booklet represents the joint cooperative work of several rubber manufacturers, the Farrel-Birmingham Co., and The New Jersey Zinc Co. It is a supplement to the booklet "Zinc Pigments for Rubber" previously issued. Highly satisfactory dispersions are being regularly obtained with all types of zinc oxide, and excellent results are attainable in all sizes of machines.

"Ureka C." The Rubber Service Laboratories Co., Akron, O. This treatise is a study in detail of the value of Ureka-C accelerator as used in mixings for treads, inner tubes, insulation stocks, sponge rubber, bathing cap, and water bottle stocks. The effect of various compounding ingredients is recorded, and properly activated formulae are given for high grade tested stocks for the uses named above.

"The Preparation of Uniform Rubber." G. Martin, W. S. Davey, and H. C. Baker. Bulletin No. 52. Published by Rubber Research Scheme (Ceylon), Peradenia, April, 1932. Miller & Co., Ltd., Kandy, Ceylon, 1932. This report is in 3 parts: (1) on the uniformity of rubber from individual estates in Ceylon; (2) uniformity of rubber from an estate in Java; and (3) variability of Ceylon crepe and sheet as regards hardness and amount of mastication required.

"The Sporting Goods Dealer's Directory of the Sporting Goods Trade." 27th Edition. *The Sporting Goods Dealer*, St. Louis, Mo. This 504-page manual forms a ready reference of the sporting goods industry, its members, and their products. A classified index, arranged alphabetically according to type of product, of goods made by sporting goods manufacturers is followed by a special supplement covering the following: Section 1, Jobbers and Products Handled, arranged geographically; Section 2, Manufacturers' Representatives, arranged alphabetically under the name of the manufacturer; Section 3, Importers, alphabetically listed; Section 4, Repair Shop Notes; Section 5, Restringing Tennis Rackets; Section 6, Executive Personnel of Trade Associations; Section 7, Open Seasons on Game Fish, according to states; Section 8, Private Brand Guns; Section 9, Trade Marks and Trade Names.

"Fabric Breaks," "Rapid Tread Wear," and **"Truck Tire Failures."** The Rubber Manufacturers Association, Inc., 250 W 57th St., New York, N. Y. These three titles indicate the contents of 3 single-page illustrated pieces of tire care educational literature being distributed by the Association as part of its campaign to reduce unwarranted adjustment losses. Every motorist and truck operator should secure and study these instructive leaflets in the interest of tire economy.

ST. JOE Lead-Free ZINC OXIDE is produced direct from our own ore by our patented Electro-Thermic Process. This process makes possible an exceptionally close control in every step of production.

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Market Reviews

Crude Rubber

THE outlook on the Rubber Exchange has changed little in the past month, but there was a definite change in sentiment. The market first received a stimulus from the tire industry which stepped up production considerably to avoid the excise tax imposed on tires and tubes.

When this activity continued into July instead of falling off as soon as the tax became effective, traders looked for a more fundamental reason for the increase than the tax. For a time automobile production showed good increases although the summer months are not the best season for this industry. The rate of output decreased slightly in the last half of July, but final figures will probably show up more favorably than was anticipated.

The June rubber consumption at 39,116 tons against 29,197 tons in May was another factor that lent confidence to the market. Much of the increase was from the tire division, but it was well maintained into this month. Then estate production in British Malaya slowed down, especially on the small estates, and the correction in Singapore stocks brought the figure there down to 16,214 tons.

Rubber stocks in London and Liverpool have declined regularly for the past few weeks, and the amount on hand now is more than 20% less than last year.

The only flaws in the picture are the large United States stocks, although even these did not increase during June, and the estimate of increased Malayan shipments. After dropping to 36,566 tons in June, the July estimate calls for 38,000 tons.

The Outside Market felt the same confidence that bolstered the Exchange market. Price changes were not large; but primary centers held their prices firmer, and offerings were not so plentiful as they had been.

Week ended July 2. Faced with a 3-day recess, the usual holiday market prevailed in the last week. Transactions were few, and prices were listless. Last week's record low prices were carried over on Monday, and slipping down another point, July made a new record on Tuesday at 2.53¢. At the end of the week prices were unchanged to 3 points higher, compared with prices the week before.

RUBBER BULL POINTS

1. **Consumption in June was 39,116 tons against 29,197 tons in May, 1932, and 37,916 tons in June, 1931.**
2. **London and Liverpool stocks are approximately 107,000 tons at present against 136,500 last year.**
3. **Singapore stocks on June 30 were only 16,214 tons, a correction being made of errors accumulated over a long period. Last year these stocks were 34,448 tons.**
4. **Small estates in British Malaya produced 11,182 tons of rubber in June against 14,079 in May; large estate production was 19,519 tons against 19,915 in May.**
5. **Estate stocks in British Malaya at the end of June were 21,053 tons, compared with 21,339 tons at the end of May and 22,101 tons at the end of June last year.**
6. **Crude rubber afloat for the United States on June 30 was 43,079 tons against 50,453 on May 31, 1932, and 52,066 on June 30, 1931.**
7. **One tire company increased salaries 20%, restoring a cut made January, 1932.**
8. **New car registrations in 23 states were 10.43% higher in June than in May.**
9. **Shipments from Ceylon in June were 3 614 tons against 4,138 tons in May and 5,242 tons in June, 1931.**
10. **Department of Commerce estimates that supply and demand will balance by the year-end.**

RUBBER BEAR POINTS

1. **Malayan shipments for July are estimated at 38,000 tons against 36,566 in June and 43,648 in July, 1931.**
2. **Imports of crude rubber during June were 41,394 long tons, an increase of 28.5% over May.**
3. **Sears, Roebuck failed to raise its tire prices to cover the recent excise tax.**
4. **Stocks on hand June 30 in the United States were 345,702 tons, almost unchanged from May 31, but 53.3% higher than on June 30, 1931.**
5. **Dealers' stocks in British Malaya on June 30 were 22,941 tons against 24,083 tons on May 31 and 19,948 tons last year.**
6. **Automobile production for the first 5 months of 1932 was 47% less than last year.**

July closed at 2.57¢ on Friday night against 2.55¢ the previous week; September was 2.66 against 2.63; December 2.81 unchanged; and March 3.01 against 2.98.

Dutch East Indies shipments of crude rubber during May were 19,422 tons against 17,952 tons in April and 25,530 tons during May, 1931. While this report is disappointing because it is above the shipments for the previous month, it is still far below the figure for last year.

The May automobile production figures as released by the Department of Commerce totaled 185,149 cars, an increase of 36,823 over the preceding month. Production in May last year was 317,163 units, and 2 years ago 420,027.

For the first 5 months of 1932 production was 689,196 cars, against 1,322,295 in the same period of 1931, a decrease of 47%. Passenger car production accounted for most of the gain, at 36,777 units over the April total. Four more trucks were produced than in April, and 42 more taxicabs.

The increased rate of automobile production has been maintained through June. For the week ended June 25 output was the highest since August, 1931. *The New York Times'* index stood at 55.3 for that week against 51.7 for the preceding week and 63.2 for the same week last year. Actual output was 54,577 cars and trucks.

In previous weeks the steady rise in production has largely been a result of increased operations by Ford. Last week 3 Chrysler subsidiaries and Hupmobile swung into greater production.

New passenger car registrations have been received from 43 states so far. From these returns it is estimated that complete registrations will be 131,202 for May against 120,524 in April and 247,727 in May, 1931.

In the Outside Market consumer buying was in evidence the first part of the week. Later, however, sales were scattered, with the influence of the 3-day holiday making itself felt. Prices were virtually unchanged from the previous week. July sold at 2 11/16¢; August-September was 2¾; and October-December was 2⅞.

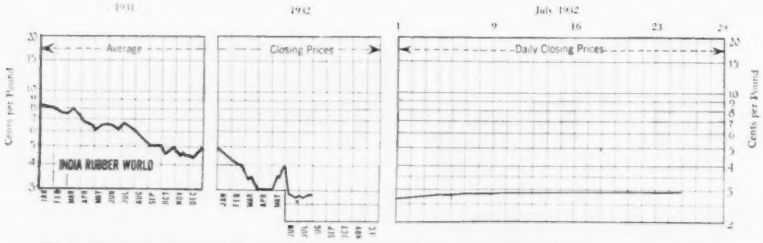
The automobile figures were the most encouraging factor in the market. With May production higher than April and June output at a good rate, manufacturers are doing well in a normally dull season.

Week ended July 9. This has been only a 4-day week on the Exchange. With the Fourth of July on Monday and the Exchange closed Saturdays, traders had a short week. Business was limited, with

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	June, 1932				July, 1932																		
	27	28	29	30	1	2*	4*	5	6	7	8	9	11	12	13	14	15	16	18	19	20	21	22	23
Ribbed Smoked Sheet	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	...	...	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 7/16	2 7/16
No. 1 Thin Latex Crepe	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	...	...	3 5/16	3 5/16	3 1/16	3 1/16	3 1/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 1/16	3 1/16
No. 1 Thick Latex Crepe	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	...	...	3 5/16	3 5/16	3 1/16	3 1/16	3 1/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 3/16	3 1/16	3 1/16
No. 1 Brown Crepe	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	...	...	2 5/16	2 5/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 3/16	2 3/16
No. 2 Brown Crepe	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 3/16	2 3/16	2 3/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 1/16	2 1/16
No. 2 Amber	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	...	...	2 5/16	2 3/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 3/16	2 3/16	2 3/16	2 3/16	2 1/16	2 1/16
No. 3 Amber	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 3/16	2 3/16	2 3/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 1/16	2 1/16	2 1/16	2 1/16	2 3/16	2 3/16
No. 4 Amber	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 3/16	2 3/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 5/16	2 5/16	2 5/16	2 5/16	2 1/16	2 1/16
Rolled Brown	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16

*Holiday.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

only 1,080 tons being sold, or an average of 270 a day. Prices recovered, however, from 9 to 14 points principally owing to satisfactory cables from primary centers.

The July position closed on Friday at 2.68¢ against 2.57¢ for the previous week; October was 2.83 against 2.71; December 2.95 against 2.81; January 3.00 against 2.88; and March 3.10 against 3.01.

Malayan shipments again declined in June after climbing upward in May. A total of 36,566 tons of crude rubber was shipped from British Malaya during June against 40,297 tons during May and 39,397 tons during June, 1931. Ceylon shipped 3,614 tons in June compared with 4,138 tons in May and 5,242 tons in June, 1931. Of this 2,231 tons came to the United States against 2,300 tons in May and 3,513 tons in June, 1931.

In May we recorded a meeting of rubber manufacturers at which George T. Bishop had been named as arbiter of the rubber industry. A further report has just been released to the effect that Mr. Bishop is the chairman of a committee consisting of Harris Creech, president of the Cleveland Trust Co. and a director of the Firestone Tire & Rubber Co.; Irenee du Pont, vice president of E. I. du Pont de Nemours & Co., and representing the du Pont company interests in the United States Rubber Co.; C. S. McCain, chairman of directors of the Chase National Bank; and Robert L. Clarkson, president of the Chase Securities Corp.

The Outside Market will do business on Saturdays through the summer instead of closing like the Exchange market. The last week was a short one and quiet. Prices were higher than a week before, owing to a better feeling abroad.

July ribbed smoked sheets closed at 2 1/16¢ against 2 1/16¢ at the end of last week; August-September was 2 1/16 against 2¾; and October-December 3¢ against 2 7/8.

After eleven weeks on the up side, the *Times'* automobile index showed a decline for the week ended July 2. The index was 54.0 against 55.3 for the preceding week and 64.6 for the same week last year. Drops in Ford and Chrysler production accounted for the slight downturn.

The successful conclusion of the Lausanne conference made a favorable impression on the market and may be the start of other constructive action.

Week ended July 16. Although activity was limited on the Rubber Exchange in the past week, prices were firmer by from 3 to 10 points. The principal reason was the steadiness at primary markets while the June statistics were being awaited. When the report showed reduced dealers' stocks and an increased consumption, the firmness was justified. The fact that stocks at London and Liverpool showed a good decline also made for steadier prices in those centers.

The July position closed at 2.78¢ against 2.68¢ at the end of last week; October was 2.87 against 2.83; December was 2.98 against 2.95; and March was 3.15 against 3.10.

United States manufacturers consumed 39,116 long tons of crude rubber in June compared with 29,197 long tons for May, 1932, an increase of 34%, according to the Rubber Manufacturers Association. No other month since May, 1930, has shown figures so high as these.

Imports, at 41,394 long tons, increased too, by 28.5% over May, but they were 9.6% less than in June last year. Domestic stocks were 345,702 long tons on June 30, an increase of 53.3% over those of June 30, 1931 but with no increase over May of this year.

Singapore stocks dropped to 16,214 tons, while dealers' stocks in the Far East were 23,763 tons. These figures at first had been reported almost twice as high.

The increased consumption and imports are largely due to the rush prior to the enactment of the Federal Excise Tax on tires and tubes. Whether the gain shown will carry over is very difficult to say.

The winter catalog of Sears, Roebuck & Co. was issued with no increase in tire prices in spite of the tax. This fact led to the belief that the company had accumulated a stock of tires at old prices and was not going to increase its prices until it sold this stock.

Business in the Outside Market was nothing to brag about in the last week, but traders liked the way prices firmed up. The favorable consumption figures for June, together with the reduction in stocks at London and Liverpool and Singapore, sent shorts to cover.

July ribbed smoked sheets were quoted at 2 7/8¢ against 2 1/16¢ last week; August-September was 2 1/16 against 2 1/16; October-December was 3 1/8 against 3¢; and January-March 3¼ against 3 1/8.

Automobile output decreased slightly for the July 9th week because of the holiday. The *Times'* index stood at 53.0 against 54.0 for the preceding week. Instead of a seasonal decline, new passenger car registrations were 18,094 in June, against 17,041 in May, according to figures from 7 states gathered by R. L. Polk & Co.

Week ended July 23. Speculative activity on Friday accounted for one of the most busy markets that the Exchange has witnessed for some time. A total of 1,170 long tons changed hands, and prices for the day were 5 to 10 points up at the close, after being much higher earlier in the day. It was rather a bullish demonstration and is a culmination of sentiment that has been appearing in the market for the last 2 weeks.

For the week prices were from 10 to 14 points on the upside. July closed at 2.88¢ against 2.78¢ at the close of last week; August 2.91 against 2.80; September 2.95

(*Continued on page 76*)

New York Quotations

New York outside market rubber quotations in cents per pound

Plantations	July 27, 1931	June 25, 1932	July 25, 1932
Rubber latex...*gal.*	75	51	51
Sheet			
Ribbed, smoked, spot	6 1/16	2 1/16	2 1/16/3
Aug.-Sept.	6¼	2¾	3
Oct.-Dec.	6¾	2 7/8	3 1/16/3 1/4
Jan.-Mar.	6 3/8	3 /3 1/16	3 1/16/3 1/4
CREPE			
No. 1 Thin latex, spot	6 5/8	3 5/16/3 11	3 1/2/3 3/4
Aug.-Sept.	6¾	3 1/16/3 1/4	3 3/4/3 7/8
Oct.-Dec.	6 7/8	3 1/8/3 7/8	3 7/8/3 1/8
Jan.-Mar.	7 1/8	4	4 /4 1/16
No. 2 Amber, spot	6	2 9/16/2 5/8	2 1/2/2 5/8
Aug.-Sept.	6 1/8	2 5/8/2 11/16	2 7/8
Oct.-Dec.	6¼	2 3/4/2 1/8	2 1/8/2 7/8
Jan.-Mar.	6 3/8	2 7/8/3	3 /3 1/16
No. 3 Amber, spot	5 7/8	2 1/2/2 9/16	2 3/4/2 13/16
No. 1 Brown	6	2 9/16/2 5/8	2 3/4/2 13/16
No. 2 Brown	5 7/8	2 1/2/2 9/16	2 1/2/2 13/16
Brown, rolled	5 5/8	2 1/4/2 3/8	2 1/2/2 5/8
PONTIANAK			
Bandjermasin	6	5	5
Pressed block	9	7	7
Sarawak	6	5	5
PARAS			
Upriver fine	8 1/16	6	6¼
Upriver fine	*11	*9 1/4	*10
Upriver coarse	..	†2 3/4	..
Upriver coarse	*7 1/2	*4 1/4	*4 3/4
Islands fine	8	†5 3/4	..
Islands fine	*11 1/2	*9	*9 3/4
Acre, Bolivian, fine	8 3/4	6 1/8	6 3/4
Acre, Bolivian, fine	*12 3/4	*9 1/2	*10 1/2
Beni, Bolivian	9	6 1/8	6 3/4
Madeira, fine	8 1/2	6	6 1/2

CAUCHO	July 27, 1931	June 25, 1932	July 25, 1932
Upper ball	..	†2 3/4	..
Upper ball	*7 1/2	*4 3/4	*4 3/4
Lower ball	..	†2 1/2	..
Manicobas			
Manicoba, 30% guar.	†5	†2	†2
Mangabiera, thin sheet	†5	..	†2
Guayule			
Duro, washed and dried	14	12	12
Ampar	15	13	12
Africans			
Rio Nuñez	..	8 1/2	8 1/2
Black Kassai	..	8 1/4	8 1/4
Manihot cuttings	..	6	6
Prime Niger flake	..	12	12
Accra flake	..	12	12
Gutta Percha			
Gutta Siak	10 1/2	7	7
Gutta Soh	18	15	15
Red Macassar	1.80	1.50	1.50
Balata			
Block, Ciudad Bolivar	27	16	16
Colombia	..	..	..
Manaos block	28	16	32
Surinam sheet	50	32	32
Amber	52	35	35

* Washed and dried crepe. Shipments from Brazil. † Nominal.

Rubber Scrap

ALTHOUGH prices have been so low that hundreds of junk dealers have been forced out of business, quotations were again shaded in July. It is true that only a few prices were changed, but this action shows how dull the scrap business is. Prices have long since hit bottom; yet concessions must be made if the dealer expects to do even the slightest bit of business.

The summer months are naturally dull; so dealers are resigned to conditions for the present. August is another slow month, and the best that can be hoped for is a change for the better after Labor Day. The unusual activity in the tire field held through the first part of the month, but it fell off again the last week. The scrap men derived very little business from the spurt.

BOOTS AND SHOES. Again prices in this classification showed no change. The firmness was rather from neglect than any other cause. Junk dealers have long refused to collect this scrap because the returns do not warrant the effort.

INNER TUBES. All grades were shaded in price except red tubes, which are still scarce. This condition accounts for their price. A fairly good demand was shown for all grades of tubes, but especially for the red ones.

TIRES. Auto tire carcass dropped $2 to $2.50, beadless pneumatics, 50 to 75¢, and mixed tires with beads, only 25¢. The other grades remain unchanged. Black peelings and solids showed quite a steady demand against the poor showing of the other grades.

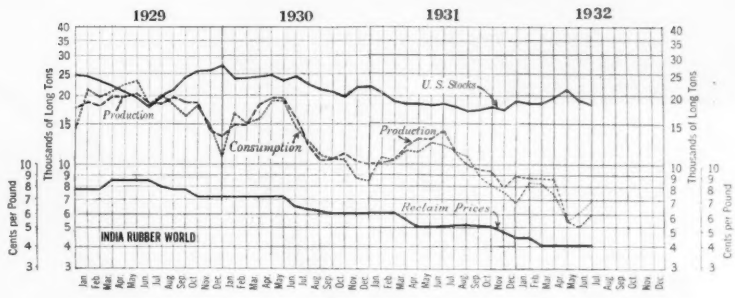
MECHANICALS. Neglect still featured the mechanicals. For the second month no price changes were registered because of lack of interest.

HARD RUBBER. Some hard rubber was sold during the month, but the price remains the same.

CONSUMERS' BUYING PRICES
Carload Lots Delivered Eastern Mills
July 25, 1932

		Prices
Boots and Shoes		
Boots and shoes, black	100 lb.	$0.75/$1.00
Colored	100 lb.	.625 /.75
Untrimmed arctics	100 lb.	.50
Inner Tubes		
No. 1, floating	lb.	.02¾/.03
No. 2, compound	lb.	.01⅝/.01¾
Red	lb.	.01½/.01⅝
Mixed tubes	lb.	.01⅝
Tires		
Pneumatic Standard		
Mixed auto tires with beads	ton	7.00/ 7.25
Beadless	ton	10.50/11.00
Auto tire carcass	ton	8.00/ 9.00
Black auto peelings	ton	19.00/19.50
Solid		
Clean mixed truck	ton	23.00/24.00
Light gravity	ton	28.00/29.00
Mechanicals		
Mixed black scrap	lb.	.00⅝/.00¾
Hose, air brake	ton	7.50/ 8.00
Garden, rubber covered	lb.	.00¾/.00⅞
Steam and water, soft	lb.	.00¾/.00⅞
No. 1 red	lb.	.01⅛/.01¼
No. 2 red	lb.	.01 /.01⅛
White druggists' sundries	lb.	.01¼/.01½
Mechanical	lb.	.00¾/.00¾
Hard Rubber		
No. 1 hard rubber	lb.	.07½/.07¾

Reclaimed Rubber



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925	132.930	137,105	35.6	13.203	4,571
1926	180.582	164,500	45.9	23,218	5,391
1927	189,144	178.471	47.6	24,980	8,540
1928	208.516	223,000	50.4	24,785	9,577
1929	219.057	224,253	47.9	27,464	12.721
1930	157.967	153,497	41.5	24.008	9.468
1931	132.462	125,001	35.7	19.257	6.971
1932					
January	8,753	8,440	30.2	18,712	475
February	8,731	8,332	27.6	18,659	484
March	8,613	7,420	26.7	19,726	476
April	5,555	5,561	21.4	21,525	370
May	5,024	6,070	20.8	18,889	188
June	5 923	7,031	18.0	16,870	....

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

COMPARED with the statistics of last month, reclaimed rubber gave a good account of itself. Consumption was 1,108 tons higher than production, and about 900 tons higher than the consumption figure for May. Stocks on hand in the United States, too, dropped from 18,889 tons at the end of May to 16,870 tons at the end of June. The only unfavorable item was that the ratio of reclaimed used to crude dropped to 18.0% from 20.8% in the previous month. The reason for this is that the consumption of crude rubber was unusually high in June. The rush to get in under the excise tax on tires and tubes jumped consumption to an unusual level.

Business as a whole was not so good in July as in June, but still it was better than expected. Tire men maintained their production long after it was thought the spurt should have spent itself. It was only in the last week of July that they showed signs of letting down, and considering that the season is a poor one, the showing is cheering.

The manufacturers of insulated wire are doing a pretty good business. Molded hose men report fair activity, as do the automobile accessory manufacturers. The latter, however, were not so busy in the last half of the month as in the first because automobile output has slowed down.

Only one price change was made in quotations for the current month, and that was upward. White auto tires were quoted at 6/6½¢ a pound, against 5½/5¾¢ in June.

Another instance was brought to light in the last month that demonstrated the value of reclaim in producing a satisfactory finished product. A manufacturer who had reverted to crude rubber found that his customers complained of softness in the finished product; so he had to include reclaim in his product again to satisfy the demand.

New York Quotations

July 25, 1932

High Tensile	Spec. Grav.	Cents per Lb.
Super-reclaim, black	1.20	5 /5¼
red	1.20	4¾/5
Auto Tire		
Black	1.21	3¾/4
Black selected tires	1.18	4 /4¼
Dark gray	1.35	5 /5¼
White	1.40	6 /6½
Shoe		
Unwashed	1.60	4¾/5
Washed	1.50	5½/5¾
Tube		
No. 1	1.00	6½
No. 2	1.10	4½/4¾
Truck Tire		
Truck tire, heavy gravity	1.55	5 /5¼
Truck tire, light gravity	1.40	5¼/5½
Miscellaneous		
Mechanical blends	1.60	3 /3½

The Proof of the Pudding—

THE container may look pretty, but it is what the bag contains that counts.

MICRONEX needs no party clothes to make it sell. Just a practical utility bag of best grade paper for serviceability.

Inside, however, you will always find steady uniformity and a freedom from grit that fully meets the rigid specifications of the present day.

It is not mere co-incidence that more tires are made with **MICRONEX** than with any other brand.

BINNEY & SMITH CO.

Specialists in CARBON BLACKS, STEARIC ACID, IRON OXIDES, MINERAL RUBBER and Other Products for the Rubber Industry

41 East 42nd Street **New York, N. Y.**

The Magic Lamp
Is Your Protection
In Blacks.

Compounding Ingredients

THE mid-summer customary decreased demand for compounding ingredients was very evident in July, following the activity of tire and tube production in anticipation of the taxes imposed by the Revenue Act of 1932. Rubber goods production is virtually limited to the very moderate trade demand. Development is active in the application of latex to manufacturing in the rubber and other industries. Colloidal materials are being offered as especially desirable for latex compounding, and their number will doubtless increase as their value is demonstrated in practice.

ACCELERATORS. Low temperature activity and improved tensile properties characterize the more popular accelerators. The extensive offerings of these essential materials provide the compounder ample choice to meet every practical problem in vulcanizing.

AGE RESISTERS. These materials differ in type according to the age resisting functions for which they are required. While not so essential in the presence of some accelerators as with others, they may be used with any of them to insure safeguarding the servicibility of the cured rubber product.

ANTISCORCH. These materials provide practical insurance against injury occasioned by overheating batches in mixing or premature storage of warm stocks in process.

CARBON BLACK. During July the rubber trade showed little buying interest in standard carbon black at 2¾¢ a pound, carload lots f. o. b. Texas. About the middle of the month the base price was shaded to 2.72¢ f. o. b. Texas and 2.82¢ f. o. b. La., with demand spotty by the tire division.

LITHARGE. There was little interest in commercial grade of litharge at 5¾¢. On July 11 this price was reduced ½¢ a pound. This is the first reduction thus far this year and is due to the decline in pig lead price.

LITHOPONE. The price in July remained unchanged at 4½-4¾¢, and supplies were well contracted for the balance of the year.

SOFTENERS. Degras is in light demand with supplies subnormal in amount although ample for any protective need. The price is steady and firm. The market for stearic acid is firm and fairly active.

SOLVENTS. Petroleum rubber solvent was in routine demand early in July, quoted at 6¾¢ a gallon at Group 3 refineries. On July 11 the price was reduced ¼¢ a gallon. Spot demand was poor.

TITANIUM PIGMENTS. These brilliant whites are reported in fair demand for rubber work and other purposes. Prices are unchanged.

ZINC OXIDE. During the entire month zinc oxide demand for rubber work held uniformly steady, and the price remains the same.

New York Quotations

July 25, 1932

Prices Not Reported Will Be Supplied on Application

Abrasives			
Pumicestone, pwd.	lb.	$0.02½	/$0.04
Rottenstone, domestic	ton	23.50	/28.00
Accelerators, Inorganic			
Litharge, com., pwd., casks	lb.	.05¾	
Magnesia, calcined, heavy	lb.	.04½	
carbonate	lb.	.05¾ /	.06
Accelerators, Organic			
Accelerator 49	lb.	.38 /	.39
Aldehyde ammonia	lb.	.65 /	.70
Altax	lb.		
Barak	lb.		
BLE	lb.		
Butene	lb.		
Captax	lb.		
Crylene	lb.		
paste	lb.		
DBA	lb.		
Di-esterex N.	lb.		
DOTG	lb.	.42 /	.43
DPG	lb.	.33 /	.34
Ethylidine aniline	lb.	.45 /	.47½
Formaldehyde aniline	lb.	.37½ /	.40
Grasselerator 808	lb.		
833	lb.		
Heptene base	lb.		
Hexamethylenetetramine	lb.	.46	
Hydrone	lb.		
Lead oleate, No. 999	lb.	.11	
Witco	lb.	.11	
Lithex	lb.		
Methylene dianiline	lb.		
Monex	lb.		
Novex	lb.		
Plastone	lb.		
R & H 40	lb.		
50	lb.		
50-D	lb.		
397	lb.		
Safex	lb.		
Super-sulphur No. 1	lb.		
No. 2	lb.		
Tensilac 39	lb.	.40 /	.42½
Thermlo F	lb.		
Thiocarbanilid	lb.	.25 /	.27
Thionex	lb.		
TMTT	lb.		
Trimene	lb.		
base	lb.		
Triphenyl guanidine	lb.	.58	.60
Tuads	lb.		
Vulcanex	lb.		
ZBX	lb.		
Zimate	lb.		
Acids			
Acetic 28% (bbls.)	100 lbs.	2.65 /	2.90
glacial (carboys)	100 lbs.	9.64 /	9.89
Sulphuric, 66°	ton	15.50	
Age Resisters			
Age-Rite Gel	lb.		
powder	lb.		
resin	lb.		
white	lb.		
Alhasan	lb.		
Antox	lb.		
Permalux	lb.		
VGB	lb.		
Zalba	lb.		
Antiscorch Materials			
UTB	lb.		
Antisun Materials			
Heliozone	lb.		
Sunproof	lb.		
Binders, Fibrous			
Cotton flock, dark	lb.	$0.08½	/$0.10
dyed	lb.	.50 /	.85
white	lb.	.11 /	.16
Rayon flock, white	lb.	1.40	
colored	lb.	1.75	
Colloidal Ingredients			
Catalpo	ton	35.00	/60.00
Premek			
15% carbon black	lb.	.15 /	.18
50% sulphur paste	lb.	.23½ /	.30
40% zinc oxide paste	lb.	.14 /	.18
COLORS			
Premek, iron oxide 55%	lb.	.19 /	.22
Chrome yellow 40%	lb.	.29 /	.32
Colors			
BLACK			
Bone, powdered	lb.	.05½ /	.15
Drop	lb.	.05½ /	.17
Lampblack (commercial)	lb.	.06 /	.08
BLUE			
Blue toners	lb.	.80 /	3.50
Prussian	lb.	.35 /	.37
Ultramarine	lb.	.06 /	.30
BROWN			
Mapico	lb.	.14 /	.15
Sienna, Italian, raw, pwd.	lb.	.04½ /	.11
GREEN			
Chrome, light	lb.	.23 /	.25½
medium	lb.	.26 /	.27½
Chrome oxide	lb.	.19 /	.21
Green toners	lb.	.85 /	3.50
ORANGE			
Cadmium sulphide	lb.		
Orange toners	lb.	.40 /	1.60
ORCHID			
Orchid toners	lb.	1.50 /	2.00
PINK			
Pink toners	lb.	1.50 /	4.00
PURPLE			
Purple toners	lb.	.60 /	2.00
RED			
Antimony Crimson, R. M. P. No. 3	lb.	.48	
Sulphur free	lb.	$0.52	
7-A	lb.	.35	
Z-2	lb.	.20	
Iron Oxides			
Rub-er-red	lb.	.08¾	
Mapico	lb.	.08½ /	.09
Red toners	lb.	.80 /	2.00
WHITE			
Lithopone	lb.	.04½ /	.05
Albalith	lb.	.04½ /	.04¾
Cryptone No. 19	lb.	.06½ /	.06¾
Cryptone CB No. 21	lb.	.06½ /	.06¾
Grasselli	lb.	.04½ /	.05
Titanium oxide, pure	lb.	.18 /	.20
Titanox "B"	lb.	.06½ /	.07
"C"	lb.	.06½ /	.07
Zinc Oxide			
Black label (lead free)	lb.	.05¾	
F. P. Florence, green seal	lb.	.09⅜ /	.09¾
red seal	lb.	.08⅜ /	.08¾
white seal (bbls.)	lb.	.10⅞	
Green label (lead free)	lb.	.05¾	
Green seal, Anaconda	lb.	.09⅜ /	.10⅛
Horsehead (lead free) brand			
Selected	lb.	.05¾ /	.06
Special	lb.	.05¾ /	.06
XX	lb.	.05¾ /	.06
green	lb.	.05¾ /	.06
red	lb.	.05¾ /	.06
Kadox, black label	lb.	.09¾ /	.09¾
blue label	lb.	.08¾ /	.08¾
red label	lb.	.07¼ /	.07½
Lehigh (leaded)	lb.	.05¼ /	.05½
Red label (lead free)	lb.	.05¼	
Red seal, Anaconda	lb.	.08⅜ /	.09⅛
Standard (leaded)	lb.	.05½ /	.05¾
Sterling (leaded)	lb.	.05½ /	.05¾
Superior (leaded)	lb.	.05½ /	.05¾
U. S. P. (bbls.)	lb.	.12¾	
White seal, Anaconda	lb.	.10⅞ /	.11⅛
XX zinc sulphide (bbls.)	lb.	.13	
YELLOW			
Chrome	lb.	.16	
Mapico	lb.	.11 /	.12
Ochre, domestic	lb.	.01¾ /	.02⅛
Yellow toners	lb.	2.50	
Deodorant			
Rodo	lb.		
Factice—See Rubber Substitutes			
Fillers, Inert			
Asbestine	ton	15.00	/16.00
Barytes (f.o.b. St. Louis)	ton	23.00	
Blanc fixe, dry, precip.	ton	70.00	/75.00
pulp	ton	42.50	/45.00
Kalite No. 1	ton	30.00	/55.00
No. 3	ton	40.00	/65.00
Suprex white, extra light	ton	60.00	/80.00
heavy	ton	45.00	/55.00

Whiting		
Chalk, precipitated	lb.	$0.03½/$0.04
Domestic	100 lbs.	1.00
Sussex	ton	
Witco	ton	20.00
Fillers for Pliability		
Flex	lb.	
Fumonex	lb.	.02½/ .06
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.02 / .05
Finishes		
Mica, amber	lb.	.04
Starch, corn, pwd	100 lbs.	2.44 / 2.64
Talc, dusting	ton	20.00
Pyrax A	ton	
Mineral Rubber		
Genasco (fact'y)	ton	40.00 /42.00
Gilsonite (fact'y)	ton	37.34 /39.65
Granulated M. R.	ton	
Hydrocarbon, hard	ton	
Parmr Grade 1	ton	23.00 /28.00
Grade 2	ton	23.00 /28.00
Mold Lubricants		
Sericite	lb.	
Soapbark (cut)	lb.	.06½/ .07
Soapstone	ton	15.00
Oils		
Castor, blown	lb.	.11¾
Poppy seed oil	gal.	1.00
Red oil, distilled (bbls.)	lb.	.06⅜/ .07⅛
Protective Colloids		
Casein, domestic	lb.	.04¾/ .06
Reenforcers		
Aluminum flake	ton	21.85 /24.50
Carbon Black		
Aerfloted arrow black	lb	.02¾
Arrow specification black	lb.	03
Century (works, c. l.)	lb.	.0285
Certified, Cabot, c. l., f. o. b. works, bags	lb.	.0272
c. l., f. o. b. works, cases	lb.	.04¼
l. c. l., f. o. b. works	lb.	.04¾
Disperso (works, c. l.)	lb.	.0285
Dixie brand	lb.	.02¾/ .06½
Elastex	lb.	.03½/ .08
Gastex (f. o. b. fact'y)	lb.	.02½/ .06
Kosmos brand	lb.	.02¾/ .06½
Micronex	lb.	.03 / .05
Ordinary (compressed or uncompressed)	lb.	.02¾/ .07
Clays		
Blue Ridge, dark	ton	
China	ton	7.50
Dixie	ton	
Langford	ton	
Par	ton	
Perfection	ton	8.00 /20.00
Standard	ton	7.50
Suprex No. 1	ton	8.00
No. 2, dark	ton	6.50
Glue, high grade	lb.	.17 / .23
Rubber Substitutes or Factice		
Amberex	lb.	.15
Black	lb.	.06 / .08
Brown	lb.	.06 / .12
White	lb.	.08 / .12½
Softeners		
Burgundy pitch	lb.	.05
Degras	lb.	.03 / .04
Fluxol	ton	18.00 /80.00
Palm oil (Witco)	lb.	.08
Petrolatum, light amber	lb.	.02½/ .02⅝
Rosin oil, compounded	gal.	.30
Rubberseed, drums	lb.	
Rubtack	lb.	.10
Tonox	lb.	
Witco Flux	gal.	.20
Solvents		
Benzol (90% drums)	gal.	.20 / .25
Carbon bisulphide (drums)	lb.	.05½/ .12
tetrachloride	lb.	.06¼/ .07
Dependip	gal.	
Dip-Sol	gal.	
Dryolene, No. 9	gal.	
Petrobenzol	gal.	
Rub-Sol	gal.	
Solvent naphtha (tanks)	gal.	.26
Stod-Sol	gal.	
Troluoil	gal.	
Turpentine, dest. distilled	gal.	.35
Stabilizers for Cure		
Laurex, ton lots	lb.	
Stearex B	lb.	.06½/ .10
flake	lb.	.06½/ .10
Stearic acid, dbl. pres'd	lb.	.08 / .12
Stabilizers for Latex		
Premek brand	lb.	.65
Vulcanizing Ingredients		
Rubber sulphur	100 lbs.	1.85 / 2.00
Sulphur chloride, drums	lb.	.03½/ .04
Telloy	lb.	
Vandex	lb.	

(See also Colors—Antimony)

Imports, Consumption, and Stocks

CONSUMPTION of crude rubber by manufacturers in the United States for June amounted to 39,116 long tons as compared with 29,197 long tons for May, 1932, an increase of 34%. This is the highest consumption for any month since May, 1930, according to The Rubber Manufacturers Association.

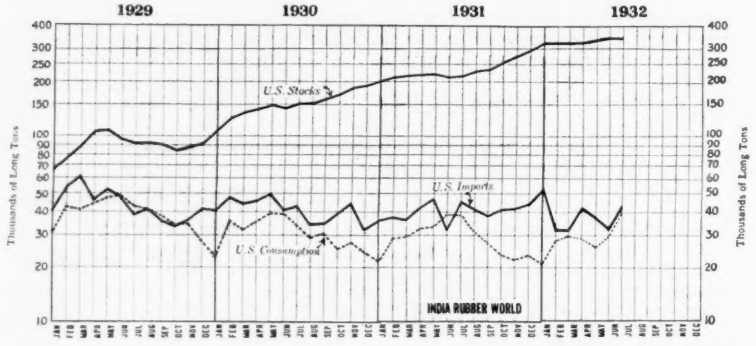
Imports of crude rubber for June are 41,394 long tons, an increase of 28.5% over May, 1932, but 9.6% below June a year ago.

The estimate for total domestic stocks of crude rubber on hand June 30 is 345,702 long tons, which compares with May 31 stocks of 346,231. June stocks show practically no change as compared with May of this year, but were 53.3% above the stocks of June 30, 1931.

Crude rubber afloat for the United States ports was 43,079 long tons on June 30. This compares with 50,453 long tons afloat on May 31, 1932, and 52,066 long tons afloat on June 30, 1931.

London and Liverpool Stocks

Week Ended		Tons London	Tons Liverpool
July	2	50,656	58,569
July	9	50,188	58,335
July	16	49,327	57,622
July	23	49,105	57,618



United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1927	431,807	372,528	100,130	47,938	65,663	25,798	605,196	589,128	193,146
1928	446,421	442,227	66,166	68,764	22,691	32,905	649,674	667,027	122,828
1929	561,454	466,475	105,138	62,389	73,276	36,768	863,410	785,475	228,572
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,826	53,940	127,103	55,458	797,441	668,660	495,724
1932									
January	31,298	27,962	322,860	42,234	125,276	59,836	63,627	50,480	507,962
February	30,546	30,012	322,117	51,728	125,958	56,684	59,871	51,230	504,759
March	42,382	27,828	334,566	44,190	124,975	51,072	58,977	63,324	510,994
April	37,017	25,953	343,098	40,387	123,235	48,303	57,232	57,450	514,637
May	32,224	29,197	346,231	50,453	116,015	47,015	62,434	56,156	509,261
June	41,394	39,116	345,702	43,079	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

New Incorporations

Bris-Shops Co., Inc., of Northbridge, Mass. 250 shares, par value $100, and 500 shares common, no par value. President, G. Snow; treasurer, J. W. Lassell, Whitinsville; and G. Perry. Manufacture canvas and rubber garments.

Commercial Rubber Co., June 28 (N. J.), capital $125,000. L. L. Barnhart, 583 Mount Prospect Ave., Newark, E. Ely, 47 Lawrence Rd., and R. E. Jackson, 47 Ridgehurst Ave., both of West Orange, all of N. J. Manufacture various rubber products.

En Es Co., Inc., July 6 (N. Y.), capital 200 shares, no par value. R. J. Gorman, S. C. Wood, and D. H. Jackman, all of 150 Broadway, New York, N. Y. Manufacture rubber goods.

TCL Rubber Products, Inc., June 21 (N. J.), 500 shares, no par value. A Trotter, 752 E. 51st St., Brooklyn, N. Y.; R. S. Krader and M. H. Pressler, both of 17 Academy St., Newark, N. J. Principal office, 17 Academy St., Newark. Manufacture various kinds of rubber products.

ADVERTISING PAGES REMOVED

Cotton and Fabrics

STEADY rains in the first half of July were followed by a clear hot spell in the latter half. Reports of general weevil emergence were followed by statements that farmers were able to work their fields and clean them from weeds and that the hot weather had checked weevils.

The crop is rapidly nearing maturity, and traders are marking time in anticipation of the first government crop report on August 1. The sharp decline in the use of fertilizer is said by many observers to show in the condition of the matured crop with shedding and poor fruiting. The rains caused a sappy condition.

With the end of the season in sight new factors enter into the situation. The agreement between the bankers, cooperatives, and the Farm Board ended July 31, and considerable doubt is expressed as to what will be done with the large stock of cotton that has been held off the market by these agencies. Reports of sales by the Farm Board in the last weeks of July had traders nervous, and they would like to have a definite pronouncement as to what will be done with the surplus.

Hedge selling against the new crop has not started in any volume as yet; but as the crop comes to market more rapidly, such selling is bound to affect the market.

The extremely low rate of mill activity has not helped sentiment in the market. New low records have been established with the cotton spinning industry running close to 50% of capacity. Sales of cloth did not meet output in June, and the same condition will probably be true in July.

Mill owners, however, in bravely trying to cut output to meet demand, have avoided accumulating large stocks so that even the slightest improvement in demand must be reflected in output.

Week ended July 2. The cotton market was the only one open on Saturday before the Fourth of July holiday. Business was fairly active, and prices scored advances of from 14 to 18 points. The advance was due to fear of boll weevil damage and of the weather over the week end. Heavy rains had prevailed in the cotton belt for a good part of the week, and gains in prices for the whole week averaged from 48 to 62 points.

July closed at 5.78¢ against 5.16¢ the previous week; October 5.92 against 5.40; December 6.05 against 5.56; January 6.14 against 5.66; March 6.29 against 5.79; and May 6.44 against 5.94 the previous week.

In many parts of the cotton belt during the week heavy rains prevented farmers from working the fields and brought out reports of weevil menace in very many places. Another adverse factor to a good crop was the lack of fertilizer. The Cotton Exchange Service said that because of the lack of the normal amount of fertilizer, the plant had been retarded in its growth and was losing out in its fight to maturity before insects could work damage to the blooms.

May consumption of American cotton was reported by the New York Cotton Exchange Service to be 1,017,000 bales, against 1,072,000 bales in April, and 964,000 in May last year. For the 10 months of the season to the end of May, consumption was 10,454,000 bales against 9,222,000 in the same period last year.

The New York Times' index of carded cotton cloth production dropped to a new low level for the June 25 week at 56.6, against 59.0 for the preceding week and 89.4 for the same week last year. Sales were estimated to be smaller than output during June by the Exchange Service, but it was thought that buying would be resumed by August unless adverse crop developments interfered.

Week ended July 9. Rainy weather helped prices to recover $1.50 a bale on Wednesday, but subsequent reports showing clear weather nullified the gain, and changes for the week were unchanged to 4 points lower. The government's acreage report was about equal to expectations and influenced the market very little. The Lausanne settlement, while drawing favorable comment, had no influence marketwise, at least for this week.

COTTON BULL POINTS

1. **Exports for the season are approximately 8,500,000 bales against 6,700,000 last year and 6,600,000, 2 years ago.**
2. **Forwardings to mills of the world so far this season are about 13,100,000 bales against 10,900,000 last year, and 12,700,000, 2 years ago.**
3. **The acreage planted to cotton totaled 37,290,000 acres on July 1, a drop of 9.5% from last year and the lowest since 1922.**
4. **Billings of cotton cloth during June were 105.1% of production, and stocks were reduced 3.3%.**
5. **The new crop acreage in Egypt is estimated at 1,367,500 against 2,103,750 last year.**
6. **Mills have curtailed output sharply and have avoided stock accumulations.**
7. **Fertilizer sales this year to July 1 were 2,275,000 tons against 3,711,000 last year and 5,160,000, 2 years ago.**
8. **A large part of the Farm Board cotton is being distributed by the Red Cross.**

COTTON BEAR POINTS

1. **The hot spell in the latter part of July has checked boll weevil, and the crop condition was much improved.**
2. **The agreement between southern bankers, cotton cooperatives, and the Federal Farm Board ends on July 31, again raising doubts as to what will be done with the cotton they have been withholding from the market.**
3. **The new crop is due shortly, and anticipation of hedge selling against it has made traders cautious.**
4. **Cotton cloth output in June was the lowest since records were established in 1928.**
5. **Sales of cotton cloth in June were 93.8% of production, and unfilled orders dropped 11.7%.**
6. **The cotton spinning industry ran at 57.7% capacity in June against 63.3% in May this year and 87.0% in June, 1931.**
7. **Cotton stocks in the United States on July 31 will probably amount to 9,700,000 bales against 6,370,000 last season.**
8. **Consumption of cotton in June was 320,783 bales against 332,439 in May this year and 356,674 in June last year.**

New York Quotations

July 25, 1932

Drills		Cents
38-inch 2.00-yd.	yd.	$0.07¾
40-inch 3.47-yd.		.04½
50-inch 1.52-yd.		.10
52-inch 1.90-yd.		.08⅛
52-inch 2.20-yd.		.07
52-inch 1.85-yd.		.08
Ducks		
38-inch 2.00-yd. D. F.	yd.	.07¾
40-inch 1.45-yd. S. F.		.10½
72-inch 1.05-yd. D. F.		.15½
72-inch 16.66-oz.		.16¾
72-inch 17.21-oz.		.17¼
MECHANICAL		
Hose and belting	lb.	.16
TENNIS		
52-inch 1.35-yd.	yd.	.11¼
Hollands		
RED SEAL		
36-in.	yd.	.10½
40-in.		.11
50-in.		.17
GOLD SEAL		
40-in., No. 72	yd.	.13¼

Tire Fabrics		Cents
BUILDER		
17¼ oz. 60" 23/11 ply Karded peeler	lb.	$0.21
17¼ oz. 60" 10/5 ply Karded peeler	lb.	.18
CHAFER		
14 oz. 60" 20/8 ply Karded peeler	lb.	.21
12 oz. 60" 10/4 ply Karded peeler	lb.	.17
9¼ oz. 60" 20/4 ply Karded peeler	lb.	.23
9¼ oz. 60" 10/2 ply Karded peeler	lb.	.18
CORD FABRICS		
23/5/3 Karded peeler, 1 1/32" cotton	lb.	.21¾
23/4/3 Karded peeler, 1 1/16" cotton	lb.	.22¾
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.19¾
13/3/3 Karded peeler, 1 1/16" cotton	lb.	.18¾
7/2/2 Karded peeler, 1 1/16" cotton	lb.	.17¾
23/5/3 Karded peeler, 1¼" cotton	lb.	.27¾
23/5/3 Karded Egyptian	lb.	.33½
23/5/3 Combed Egyptian	lb.	.38½
LENO BREAKER		
8¼ oz. and 10¼ oz. 60" Karded peeler	lb.	.21

Osnaburgs		Cents
40-in. 2.34-yd.	yd.	$0.06¼
40-in. 2.48-yd.		.06
40-in. 3.00-yd.		.05
40-in. 10-oz. part waste		.09
40-in. 7-oz.		.06
37-in. 2.42-yd.		.06⅛
Raincoat Fabrics		
COTTON		
Bombazine 64 x 60	yd.	.07¾
Bombazine 60 x 48		.07¼
Plaids 60 x 48		.08¾
Plaids 48 x 48		.07¾
Surface prints 60 x 60		.09¼
Surface prints 60 x 48		.09
Print cloth, 38½-in., 64 x 60		.03¼
Print cloth, 38½-in., 60 x 48		.02¾
SHEETINGS, 40-INCH		
48 x 48, 2.50-yd.	yd.	.04½
48 x 48, 2.85-yd.		.04
64 x 68, 3.15-yd.		.04¼
56 x 60, 3.60-yd.		.04
44 x 48, 3.75-yd.		.03½
44 x 40, 4.25-yd.		.03
SHEETINGS, 36-INCH		
48 x 48, 5.00-yd.	yd.	.02⅝
44 x 40, 6.15-yd.		.02¼

July closed at 5.75¢ against 5.78¢ the previous week; October 5.90 against 5.92; December 6.05 unchanged; January 6.14 unchanged; March 6.26 against 6.29; and May 6.40 against 6.44.

The Department of Agriculture announced that cotton under cultivation in July was 37,290,000 acres, or 9.5% less than a year ago, when 41,189,000 acres were under cultivation. A condition report of the crop cannot be given under the law until a canvass has been made in August of crop prospects. The only other information given was that abandonment between July 1 and picking during the last 10 years, 1922-31, has been on an average of 3.1%.

The Fossick Bureau report early in the week said: "The weather during the week favored both plant growth and insect activity over most of the cotton belt. While the extent to which the crop will suffer from weevil depredations depends greatly upon the weather during the next 2 months, the situation is already alarming. The plant is becoming somewhat spotted as to size and is not fruiting uniformly well. The general condition appears to be above a 10-year average for the date but is beginning to point downward." For the next few weeks it will be a weather market, and whether the boll weevil will do serious damage depends on the amount of rain in the coming days. In Texas the situation is already said to be grave, and traders are watching weather reports carefully.

Week ended July 16. A hot spell of weather this week supplanted the rainy stretch of the week before. Prices naturally sold off, but on reports that farmers were complaining of sappy growth and plant damage, the market climbed upward until trade reactions set in. Fluctuations of 20 points and more were seen on several days, but the gains and losses balanced each other so that for the week prices were only from 1 to 4 points lower.

Thus the July position closed at 5.73¢ compared with 5.75¢ at the end of last week; October 5.88 against 5.90; December 6.01 against 5.05; January 6.10 against 6.14; and March 6.26 unchanged.

The warm weather has enabled farmers to fight boll weevil, but in many sections the pest has already secured a good hold. To take place of the weevil menace, now are the reports of wilting and shedding that the hot weather has caused.

The consumption report had been anticipated on the market and caused little action marketwise. Cotton consumed during June was 320,783 bales of lint and 46,680 of linters against 332,439 and 50,178 in May this year and 356,674 and 61,796 in June, last year. For the 11 months of the season so far consumption has been 4,590,447 bales against 4,820,430 in the same period last year.

Exports in June were 360,205 bales against 255,403 last June.

The cotton cloth index of the *Times'* showed a sharp decline for the July 9th week. The index stood at 60 against 65.6 for the preceding week and 83.4 for the same week last year. The July fourth holiday accounts for part of the sharp drop, but curtailment this year was unusually severe. Consumption in June by American mills was 57.5% against 55.7% in May and 81.1% in June, 1931.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
July 2	5.63
July 9	6.03
July 16	5.82
July 23	5.79

Week ended July 23. In an erratic market prices on the Cotton Exchange fluctuated up and down in a narrow range. Selling in the October delivery on Saturday brought local offerings, and the day's declines made up most of the week's losses of 12 to 15 points.

October closed at 5.74¢ against 5.88¢; December 5.89 against 6.01; January 5.97 against 6.10; March 6.11 against 6.26; and May 6.25 against 6.39. Spot cotton was 5.75¢.

The heat wave that hit the South improved the crop in many sections, enabling the farmers to clean their fields and to fight the boll weevil. Only in sections of Oklahoma and Texas are general rains needed.

Cotton cloth production showed another decline in the week ended July 16, with the *Times'* index standing at 59.7, against a corrected figure of 62 for the preceding week, and 77.3 for the same week in 1931. Sales on some lines have improved, and prices have remained firm in the face of severe competition.

June operations in the cotton spinning industry were reported at 57.7% of capacity by the Census Bureau, compared with 63.3% in May and 87.0% in June of last year.

Production of carded cotton cloths during June amounted to 200,587,000 yards, the lowest rate since comparable records were established in 1928, according to the Association of Cotton Textile Merchants. Production was 12.7% less than the weekly rate in May. Billings were 105.1% of production; stocks on hand decreased 3.3%; sales were 93.8% of output, and unfilled orders dropped 11.7%.

Cotton stocks, owing to the unusually large crop of last year, will probably amount to 9,700,000 bales at the close of the season on July 31, said the New York Cotton Exchange Service. Last year the carryover was 6,370,000 bales, and 2 years ago, 4,530,000 bales.

Contrary to the firmness in stocks and bonds, the cotton market sold off on July 25 with a net decline for the day of 10 points. The heavy selling said to be sponsored by the Farm Board and local selling accounted for the decline.

The spot market on July 26 advanced 5 points. Middlings closed at 5.80¢.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The July market presents no outstanding features. It continues to be rather flat. After a fortnight of dull business the first half of July, a slight improvement was noted in the second half. Purchases were confined to goods for prompt or nearby delivery to cover immediate needs. Prices of cotton textiles are so low that sooner or later they will attract attention from an investment standpoint on the part of those still having buying power. This possibility is likely to become manifest when the full size of the current crop can be closely approximated. Cotton factory products are exceptionally cheap and represent values not likely to continue permanently available.

SHEETINGS. The gray cloth market on both sheetings and print cloths was very quiet and uninteresting in July. Midsummer is the quietest period of the year for the trade in sheeting, and at present there is little incentive on the part of buyers in general. Business is being done only on the basis of actual current needs.

TIRE FABRICS. Tire fabric sales continued in about the usual reduced volume at concessions. List prices held unchanged.

Crude Rubber

(*Continued from page 68*)

against 2.82; December 3.09 against 2.98; and March 3.29 against 3.15.

Much of the confidence reflected in foreign cables is inspired by the steadily declining rubber stocks at London and Liverpool. At the end of the July 16 week these stocks amounted to approximately 107,000 tons against 135,000 at the same date last year, a drop of over 20%.

According to estimates, Malayan shipments are expected to increase again for July after showing a decline in the last few months. Shipments in the first half of the month were 19,000 tons, leading to an estimate of 38,000 tons for the full month against 36,566 tons in June and 43,648 in July of last year.

Estate stocks in British Malaya at the end of June were 21,053 tons against 21,339 tons at the end of May and 22,101 tons at the end of June, 1931. Dealers' stocks were 22,941 tons at the month end against 24,083 tons at the end of May and 19,948 tons last June.

In the Outside Market traders reported a much firmer tone in the last week. Foreign offerings were scarce and offered at no price concessions. The improvement in the tire business for the last few months is another stabilizing factor in the market, emphasized by the announcement of one company that it had increased salaries of its employes 20%, restoring a cut made the first of the year.

Prices were up a bit on the nearby positions. July was 3¢ against 2 7/8¢ at the end of last week; August-September 3 1/16 against 2 15/16; October-December unchanged at 3 1/8; and January-March unchanged at 3 1/4.

Rubber prices gained 4 to 5 points on July 25, largely as a result of speculative operations. The underlying feeling of confidence did not seem to be so strong as during last week. In the Outside Market prices gained fractionally, but dealers are well supplied and not expected to do much in the market for the present. London and Liverpool stocks showed another drop last week.

Spot smoked sheet ribs were 3 1/8¢ on July 27 because of a good demand developed in speculative quarters.

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Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Faultless Rubber Co.	Com.	$0.50 q.	Oct. 1	Sept. 15
Stedman Rubber Flooring Co.	Pfd.	$1.75 q.	July 1	June 25
Worthington Ball Co.	B Com	$0.25	July 15	June 30

Low and High New York Spot Prices in Cents Per Pound

	July		
PLANTATIONS	1932*	1931	1930
Thin latex crepe	3 1/16/3 1/8	6 1/4/7 1/4	10 7/8/12 3/4
Smoked sheet, ribbed	2 5/8/2 7/8	5 3/4/6 3/4	10 3/8/12 1/4
PARAS			
Upriver fine	5 1/4/5 3/4	8 1/4/8 3/4	13 1/4/14 1/4
Upper caucho ball	†2 1/2	.....	7 1/4

*Figured to July 25, 1932. †Nominal.

U. S. Crude and Waste Rubber Imports for 1932

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1932	Totals 1931	Balata	Miscellaneous	Waste
Jan. .....tons	30,847	271	142	38	..	..	..	31,298	37,098	53	731	50
Feb.	30,041	361	144	..	..	..	..	30,546	36,645	98	689	..
Mar.	41,753	335	240	54	..	..	..	42,382	40,338	65	754	25
Apr.	36,390	516	111	..	..	..	..	37,017	46,648	35	421	..
May	32,030	82	81	31	..	..	..	32,224	31,720	72	645	30
June	41,070	290	34	..	..	..	..	41,394	45,776	17	415	..
Total, 6 mos., 1932 ....tons	212,131	1,855	752	123	..	..	..	214,861	.....	340	3,655	105
Total, 6 mos., 1931 ....tons	232,687	2,069	3,348	120	1	..	..	.....	238,225	781	4,590	106

Compiled from The Rubber Manufacturers Association, Inc., statistics.

Imports by Customs Districts

	May, 1932 Rubber Latex Pounds	Rubber Latex Value	Crude Rubber Pounds	Crude Rubber Value	May, 1931 *Crude Rubber Pounds	*Crude Rubber Value
Massachusetts	264,782	$22,839	4,067,087	$157,230	2,948,448	$257,015
Buffalo	.....	.....	2,128,051	115,406	.....	.....
New York	25,675	3,103	62,612,510	2,277,603	66,883,917	4,994,163
Philadelphia	.....	.....	489,558	17,463	311,417	25,533
Maryland	.....	.....	966,324	33,329	137,461	8,871
Mobile	.....	.....	1,702,088	43,237	.....	.....
Georgia	.....	.....	.....	.....	1,190,725	72,679
Los Angeles	.....	.....	3,988,413	129,204	8,514,167	586,473
San Francisco	.....	.....	423,447	17,539	145,600	10,658
Oregon	.....	.....	11,200	570	47,040	3,684
Ohio	24,484	1,507	.....	.....	.....	.....
Colorado	.....	.....	180,004	7,333	112,000	9,764
Totals	314,941	$27,449	76,568,682	$2,798,914	80,290,775	$5,968,840

* Crude rubber including latex dry rubber content.

Tire Production Statistics

	Pneumatic Casings—All Types Inventory	Production	Total Shipments	Solid and Cushion Tires Inventory	Production	Total Shipments
1929	9,470,368	54,980,672	55,515,884	122,200	407,347	436,027
1930	7,202,750	40,772,378	42,913,108	75,871	204,340	250,635
1931	6,219,776	38,992,220	40,048,552	38,815	136,261	167,555
1932						
Jan.	6,329,417	2,769,988	2,602,469	37,327	8,522	9,488
Feb.	7,337,796	3,096,976	2,042,289	37,242	9,754	9,541
Mar.	7,902,258	2,936,872	2,363,232	36,811	8,796	9,205
Apr.	7,876,656	2,813,489	2,958,104	35,816	7,980	8,436
May	7,502,953	3,056,050	3,406,493	35,179	8,026	8,405

	Inner Tubes—All Types Inventory	Production	Total Shipments	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1929	10,245,365	55,062,886	56,473,303	208,824,653	598,994,708	14,748,552,000
1930	7,999,477	41,936,029	43,952,139	158,812,462	476,755,707	16,200,894,000
1931	6,337,570	38,666,376	40,017,175	151,143,715	456,615,428	16,941,750,000
1932						
Jan.	6,175,055	2,718,508	2,803,369	12,156,282	36,850,171	1,112,370,000
Feb.	7,007,567	3,056,988	2,182,405	12,518,243	39,472,356	1,071,840,000
Mar.	7,558,177	2,801,602	2,148,899	11,292,363	36,202,474	1,236,942,000
Apr.	7,552,674	2,579,768	2,708,186	11,083,556	35,416,482	1,270,080,000
May	7,130,625	2,727,462	3,093,593	12,044,956	37,681,119	1,326,738,000

Rubber Manufacturers Association, Inc., figures representing 80% of the industry since January, 1929, with the exception of gasoline consumption.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

No.	SPECIAL CIRCULARS
3288	British exports of automobile casings, April, 1932.
3289	British exports of footwear, April, 1932.
3290	Italian tire exports, February, 1932.
3291	German tire exports, April, 1932.
3292	Tenth report on native rubber cultivation, first quarter, 1932.
3300	Rubber Division special circulars, second quarter, 1932.
3301	Canadian tire exports, May, 1932.
3302	British automobile casing exports, May, 1932.
3303	British footwear exports, May, 1932.
3305	Italian tire exports, March and first quarter, 1932.
3306	Belgian tire exports, March and April, 1932.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
†24	Pneumatic tires	Buenos Aires, Argentina
*28	Athletic supports	Buenos Aires, Argentina
*†61	Surgical and hospital goods	Sheffield, England
†117	Rubber good	Buenos Aires, Argentina
*144	Toy balloons	Cairo, Egypt
†190	Toys	Milan, Italy
*191	Tires and tubes	Chaman, India
*240	Boots, shoes, and soles	Milan, Italy
†241	Hose	The Hague, Netherlands
*294	Gloves	Amsterdam, Netherlands
*†322	Belting and packing	Bangkok, Siam
†325	Balloons	Buenos Aires, Argentina
†364	Tennis balls	Sao Paulo, Brazil
*†378	Balloons	Rio de Janeiro, Brazil
*388	Druggists' sundries and novelties	Toronto, Canada
†401	Scrap rubber	Hamburg, Germany

*Purchase. †Agency. *†Purchase and agency.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for June, 1932:

Rubber Exports

Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham

To	June, 1932 Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
United Kingdom	7,014	110
United States	20,799	234
Continent of Europe	5,696	117
British possessions	779	1
Japan	1,355	3
Other countries	458	...
Totals	36,101	465

Rubber Imports

Actual Imports by Land and Sea

From	June, 1932 Dry Rubber Tons	Wet Rubber Tons
Sumatra	520	2,384
Dutch Borneo	224	1,226
Java and other Dutch Islands	109	5
Sarawak	475	6
British Borneo	78	15
Burma	114	6
Siam	88	78
French Indo-China	280	34
Other countries	20	3
Totals	1,908	3,757

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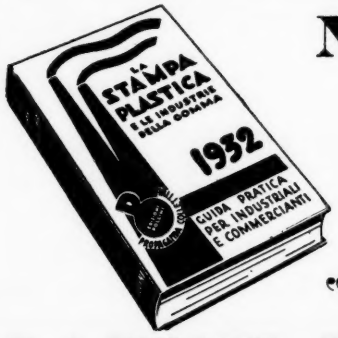

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(*Advertisements continued on page* 81)

United States Statistics

Imports of Crude and Manufactured Rubber

	April, 1932		Four Months Ended April, 1932	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	34,903,338	$3,181,343	323,188,124	$13,510,899
Liquid latex	1,233,497	46,397	3,834,887	183,777
Jelutong or pontianak	710,480	44,165	4,408,900	269,774
Balata	113,897	10,939	705,497	70,334
Gutta percha	21,207	1,385	159,573	12,276
Siak, scrap, and reclaimed	387,309	3,350	1,847,605	20,055
Totals	37,430,320	$3,290,549	334,144,586	$14,067,065
Chicle, crude—*Free*	641,137	$302,493	2,402,530	$1,074,170
MANUFACTURED—*Dutiable*				
Tires—*number*	5,831	$66,777	8,227	$78,787
Other rubber manufactures	.....	49,116	.....	205,696
Totals	.....	$115,893	.....	$284,483

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	4,769,361	$197,051	17,843,269	$852,175
Balata	60,806	8,840	109,205	23,807
Guayule	2,300	281	2,300	281
Gutta percha, rubber substitutes, and scrap	13,022	1,288	16,171	1,575
Rubber manufactures	.....	445	.....	2,597
Totals	.....	$207,905	.....	$880,835

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	829,375	$34,221	4,064,417	$173,633
Scrap and old	4,709,230	73,813	20,959,547	341,533
Rubberized automobile cloth, *sq. yd.*	45,945	18,047	181,970	68,344
Other rubberized piece goods and hospital sheeting, *sq. yd.*	77,556	24,130	241,227	77,741
Footwear				
Boots—*pairs*	9,570	20,215	49,733	106,911
Shoes—*pairs*	25,277	13,428	79,407	41,961
Canvas shoes with rubber soles—*pairs*	22,076	11,463	102,821	59,278
Soles—*doz. pairs*	2,071	4,101	9,226	18,986
Heels—*doz. pairs*	30,639	17,899	129,491	79,128
Water bottles and fountain syringes—*number*	14,977	5,035	62,291	21,841
Gloves—*doz. pairs*	5,062	11,213	18,804	42,311
Other druggists' sundries	.....	19,986	.....	102,596
Balloons—*gross*	15,449	14,853	116,658	95,956
Toys and balls	.....	2,907	.....	11,099
Bathing caps—*doz.*	8,583	15,845	24,124	45,255
Bands	26,421	7,775	117,068	35,443
Erasers	18,895	10,752	93,714	56,700
Hard rubber goods				
Electrical goods	111,875	8,918	342,135	37,207
Other goods	.....	8,149	.....	37,141
Tires				
Trucks and bus casings, *number*	18,665	277,929	72,088	1,153,161
Other automobile casings, *number*	78,971	473,280	263,371	1,813,628
Tubes, auto—*number*	54,108	55,085	210,612	229,306
Other casings and tubes, *number*	2,026	5,267	9,301	21,342
Solid tires for automobiles and motor trucks, *number*	619	16,270	3,306	84,440
Other solid tires	115,383	15,657	566,702	71,372
Tire sundries and repair materials	.....	47,751	.....	188,304
Rubber and friction tape	65,683	14,345	252,232	58,229
Belting	163,840	64,382	562,581	235,920
Hose	179,997	48,129	945,604	250,085
Packing	108,191	37,886	346,776	127,536
Thread	93,746	60,452	412,892	261,965
Other rubber manufactures	.....	93,977	.....	328,576
Totals	.....	$1,533,160	.....	$6,276,898

London Stocks, May, 1932

LONDON	Landed Tons	Delivered Tons	Stocks, May, 1932: 1932 Tons	1931 Tons	1930 Tons
Plantation	3,212	8,966	56,040	86,608	77,206
Other grades	22	27	49	75	52
LIVERPOOL					
Plantation	*1,639	*3,100	*59,926	*53,641	*25,415
Total tons, London and Liverpool	4,873	12,093	116,015	140,324	102,673

*Official returns from the recognized public warehouses.

World Rubber Shipments—Net Exports

British Malaya	Long Tons—1932: Feb.	Mar.	Apr.	May	June
Gross exports	42,008	39,903	36,670	40,297	36,566
Imports	8,008	6,658	4,682	5,677	5,665
Net	34,000	33,245	31,988	34,620	30,901
Ceylon	4,533	3,959	3,352	*4,140	*3,620
India and Burma	803	284	365	.....	.....
Sarawak	696	501	459	595	481
British No. Borneo	460	460	420	.....	.....
Siam	334	217	130	118	166
Java and Madura	4,814	4,946	6,722	6,552	.....
Sumatra E. Coast	6,011	6,863	6,090	6,551	.....
Other N. E. Indies	6,325	6,252	4,856	6,013	.....
French Indo-China	1,060	774	*913	*949	*1,231
Amazon Valley	352	715	487	416	394
Other America	.....	.....	10	.....	.....
Guayule	.....	.....	.....	.....	.....
Africa	203	77	*75	*75	*75
Totals	59,591	58,293	55,867	.....	.....

*Estimate.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

CONSUMPTION	Long Tons—1932: Mar.	Apr.	May
United States	27,919	26,038	29,292
United Kingdom	4,556	8,568	6,107
NET IMPORTS			
Australia	1,211	1,549	2,048
Austria	188	62	154
Belgium	721	847	.....
Canada	2,588	1,600	1,416
Czechoslovakia	644	1,259	.....
Denmark	98	68	64
Finland	11	36	154
France	2,482	2,956	2,277
Germany	3,436	3,737	3,447
Italy	1,423	1,083	1,033
Japan	5,398	3,684	3,917
Netherlands	112	348	296
Norway	70	90	98
Russia	2,745	764	.....
Spain	359	417	272
Sweden	277	280	.....
Switzerland	38	49	26
Others	*800	*800	*800
Totals	55,076	54,235	.....
Minus United States (Cons.)	27,919	26,038	29,292
Total foreign	27,157	28,197	.....

*Estimate to complete table.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Plantation Rubber Crop Returns by Months

Summary of 615 Producing Companies

1932	Br. N. Borneo (26 Companies) Long Tons	Index	Ceylon (102 Companies) Long Tons	Index	India and Burma (21 Companies) Long Tons	Index	Malaya (338 Companies) Long Tons	Index	Netherlands East Indies—Java (60 Companies) Long Tons	Index	Netherlands East Indies—Sumatra (60 Companies) Long Tons	Index	Miscellaneous (8 Companies) Long Tons	Index	Total (615 Companies) Long Tons	Index
January	352	72.0	1,378	67.5	208	37.0	14,409	115.9	2,791	106.3	4,712	116.9	212	117.1	24,062	107.6
February	336	68.7	738	36.2	82	14.6	11,854	95.3	2,793	106.4	3,894	96.6	120	66.3	19,817	88.6
March	365	74.6	1,189	58.3	152	27.0	11,395	91.6	3,071	116.9	4,210	104.4	143	79.0	20,525	91.8
April	318	65.0	1,206	59.1	150	26.7	11,983	96.4	2,769	105.4	4,054	100.5	160	88.4	20,640	92.3
May	321	65.6	932	45.7	104	18.5	12,723	102.3	2,544	96.9	4,335	107.5	166	91.7	21,125	94.5
Five months ending May, 1932	1,692	....	5,443	....	696	....	62,364	....	13,968	....	21,205	....	801	....	106,169	....
1931	1,995	....	7,018	....	2,394	....	58,099	....	15,129	....	20,020	....	952	....	105,607	....

NOTE: Index figures throughout are based on the monthly average for 1929 = 100. Issued June 27, 1932, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.

Classified Advertisements

CONTINUED

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MILLS—6"x12", 12"x24", 16"x36", 16"x42", 18"x50", 20"x22"x60", 22"x72", 24"x26"x84" Farrel, Thropp. Vaughn, Allen, W.S.M., Birmingham.
CALENDERS—100", 66", 60", 54", 48", 30", 24", in 2 3, 4-Roll Farrel, Adamson, Vaughn.
TUBERS—Nos. 1, 2, 3, 4, Royle Perfected.
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HYDRAULIC PRESSES—14"x14" (Ten Platens) 24"x24", 30"x30", 36"x36", 34"x34" (Seven Platens) 40"x40", 44"x44", 48"x48", etc.
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Rims Approved by The Tire & Rim Association, Inc.

Rim Size	Six Months, 1931 Number	Six Months, 1931 Per Cent	Six Months, 1932 Number	Six Months, 1932 Per Cent
Motorcycle				
24x3	285	0.0	649	0.0
Clincher				
30x3½	14,188	0.2	4,678	0.1
Drop Center				
16x3.62F	.....	...	20	0.0
17x3.00D	10	0.0	6,401	0.2
17x3.25E	7,283	0.1	127,100	3.2
17x3.62F	216	0.0	313,513	7.8
17x4.00F	6	0.0	8,945	0.2
17x4.19F	.....	...	57,692	1.4
18x2.15B	16,447	0.2	8,956	0.2
18x3.00D	.....	...	1,352,230	8.8
18x3.25E	322,091	3.0	991,188	24.8
18x3.62F	24	0.0	66,945	1.7
18x4.00F	20	0.0	65,517	1.7
18x4.19F	11	0.0	37,703	0.9
19x2.15B	5,461	0.1	5,416	0.1
19x2.75D	3,880	0.0	.....	...
19x3.00D	4,479,450	54.0	47,768	1.2
19x3.25E	65,887	0.8	.....	...
19x3.62F	1,603	0.0	.....	...
19x4.00F	29,410	0.4	.....	...
20x2.75D	423	0.0	123	0.0
Semi Drop Base Split Rims				
17x3.00D	28	0.0	.....	...
17x3.25E	14,759	0.2	.....	...
17x3.62F	2,519	0.0	9,981	0.2
18x3.00D	25	0.0	.....	...
18x3.25F	26,241	0.3	.....	...
19x3.00D	117,624	1.4	10,468	0.3
19x3.62F	20	0.0	.....	...
Flat Base Balloon				
17x3.25E	25,659	0.3	.....	...
17x4	82,902	1.0	8,246	0.2
17x4½	140,035	1.7	8,636	0.2
17x5	7,188	0.1	2,727	0.1
18x3.00D	316	0.0	.....	...
18x3.25E	118,711	1.4	1,193	0.0
18x4	191,330	2.3	10,144	0.3
18x4½	20,051	0.2	91	0.0
18x5	39,387	0.5	3,474	0.1
18x6	18,783	0.2	.....	...
19x2.75D	89,595	1.1	6,150	0.2
19x3.00D	85,632	1.0	345	0.0
19x3.25E	2,244	0.0	.....	...
19x3½	3,060	0.0	.....	...
19x4	389,003	4.7	10,064	0.3
19x4½	235,619	2.1	4,993	0.1
19x5	54,356	0.7	2,003	0.1
20x2.75D	33,697	0.4	6,804	0.2
20x3½	9,443	0.1	11,593	0.3
20x4	18,003	0.2	4,372	0.1
20x4½	9,432	0.1	1,673	0.0
20x5	14,248	0.2	7,655	0.2
20x6	335	0.0	906	0.0
21x2.75D	1,023	0.0	1,074	0.2
21x3½	31,029	0.4	7,950	0.2
21x4	7,251	0.1	4,096	0.1
21x4½	8,021	0.1	2,914	0.1
21x5	2,009	0.0	48	0.0
21x6	1,734	0.0	500	0.0
22x4	153	0.0	.....	...
High Pressure				
30x3½	5,946	0.1	.....	...
High Pressure (*Continued*)				
32x4	1,987	0.0	558	0.0
32x4½	2,616	0.0	.....	...
34x4½	.....	...	358	0.0
18" Truck				
18x5	1,100	0.0	3,015	0.1
18x7	6,352	0.1	2,704	0.1
18x8	1,088	0.0	248	0.0
20" Truck				
20x5	1,196,349	14.5	576,782	14.4
20x6	114,930	1.4	84,558	2.1
20x7	76,917	0.9	39,200	1.0
20x8	42,132	0.5	29,148	0.7
20x9/10	5,848	0.1	3,567	0.1
20x10.50	1,231	0.0	219	0.0
20x11	805	0.0	521	0.0
22" Truck				
22x7	1,975	0.0	349	0.0
22x8	6,634	0.1	3,087	0.1
22x9/10	2,923	0.0	3,705	0.1
24" Truck				
24x5	1,025	0.0	.....	...
24x6	1,841	0.0	1,512	0.0
24x7	8,480	0.1	3,926	0.1
24x8	26,389	0.3	13,958	0.4
24x9/10	5,824	0.1	3,817	0.1
24x11	98	0.0	320	0.0
Airplane				
18x3	200	0.0	.....	...
24x4	109	0.0	.....	...
44x10	114	0.0	.....	...
Totals	8,261,073	...	3,994,496	...

Rubber Goods Production Statistics

		1932	1931							1932			
		May	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Tires and Tubes														
Pneumatic casings														
Production	thousands	....	4,543	4,538	3,941	3,125	2,538	2,379	2,001	2,115	2,770	3,097	2,937	2,813
Shipments, total	thousands	....	4,302	4,458	4,370	3,968	3,145	2,281	2,310	2,225	2,602	2,042	2,363	2,958
Domestic	thousands	....	4,197	4,320	4,244	3,845	3,034	2,185	2,223	2,171	2,545	1,973	2,281	2,886
Stocks, end of month	thousands	....	8,250	8,358	7,936	7,117	6,527	6,640	6,335	6,220	6,329	7,338	7,902	7,877
Solid and cushion tires														
Production	thousands	....	11	12	13	12	10	11	9	10	9	10	9	8
Shipments, total	thousands	....	16	15	16	16	13	14	10	11	9	10	9	8
Domestic	thousands	....	14	14	15	15	12	13	10	10	9	9	9	8
Stocks, end of month	thousands	....	61	57	55	51	46	43	42	39	37	37	37	36
Inner tubes														
Production	thousands	....	4,330	4,286	3,964	3,548	2,759	2,462	1,955	2,078	2,719	3,057	2,802	2,580
Shipments, total	thousands	....	4,225	4,318	4,665	4,240	3,320	2,250	2,076	2,213	2,803	2,182	2,149	2,708
Domestic	thousands	....	4,135	4,228	4,569	4,158	3,247	2,187	2,022	2,172	2,761	2,135	2,094	2,658
Stocks, end of month	thousands	....	8,439	8,403	7,672	7,019	6,476	6,657	6,496	6,338	6,175	7,008	7,008	7,553
Raw material consumed														
Fabrics	thous. of lbs.	....	18,010	17,085	15,140	11,745	9,585	9,263	8,361	7,981	12,156	12,518	11,292	11,084
Miscellaneous Products														
Rubber bands, shipments	thous. of lbs.	....	215	209	246	195	201	225	197	231	206	208	223	202
Rubber clothing, calendered														
Orders, net	no. coats and sundries	12,503	19,380	21,161	17,932	21,580	23,966	20,925	14,341	13,654	20,720	12,388	13,970	12,503
Production	no. coats and sundries	12,886	18,094	15,419	14,431	27,080	22,728	19,773	23,255	16,221	10,130	20,405	17,649	12,886
Rubber-proofed fabrics, production, total	thous. of yds.	....	3,050	3,212	3,337	3,787	4,692	4,112	2,529	2,074	2,184	2,448	2,462	....
Auto fabrics	thous. of yds.	....	982	701	531	596	528	445	394	380	339	233	312	....
Raincoat fabrics	thous. of yds.	556	1,066	1,355	1,843	2,226	2,988	2,476	1,267	931	853	883	754	701
Rubber flooring, shipments	thous. of sq. ft.	399	569	576	577	595	595	550	462	587	358	376	422	546
Rubber and canvas footwear														
Production, total	thous. of pairs	....	3,402	3,921	2,407	3,382	3,934	4,363	4,217	4,469	3,557	3,777	3,787	4,104
Tennis	thous. of pairs	....	2,142	1,999	836	1,021	1,012	1,231	1,443	2,078	2,496	3,226	3,187	3,446
Waterproof	thous. of pairs	....	1,261	1,922	1,570	2,361	2,922	3,131	2,773	2,391	1,061	552	600	657
Shipments, total	thous. of pairs	....	4,113	4,094	3,272	4,245	5,706	5,104	3,720	4,208	3,990	4,454	4,998	5,073
Tennis	thous. of pairs	....	3,437	2,757	1,645	1,252	1,335	633	475	734	2,374	3,411	4,264	4,374
Waterproof	thous. of pairs	....	676	1,337	1,627	2,993	4,371	4,471	3,245	3,474	1,616	1,043	735	698
Shipments, domestic, total	thous. of pairs	....	3,942	3,886	3,030	4,065	5,448	4,907	3,632	4,054	3,962	4,416	4,943	5,010
Tennis	thous. of pairs	....	3,316	2,657	1,520	1,223	1,263	589	446	616	2,353	3,378	4,216	4,333
Waterproof	thous. of pairs	....	626	1,229	1,510	2,842	4,185	4,318	3,186	3,438	1,610	1,038	727	677
Stocks, total, end of month	thous. of pairs	....	23,881	23,789	22,935	22,070	20,615	19,880	20,367	20,628	20,237	19,551	19,347	18,381
Tennis	thous. of pairs	....	7,523	6,766	5,957	5,704	5,473	6,076	7,044	8,387	8,510	8,264	8,191	7,267
Waterproof	thous. of pairs	....	16,357	17,024	16,978	16,366	15,141	13,804	13,323	12,241	11,726	11,287	11,156	11,115
Rubber heels														
Production	thous. of pairs	....	15,474	17,093	15,361	16,293	15,827	14,567	11,455	14,138	12,316	14,787	16,368	11,737
Shipments														
Export	thous. of pairs	....	612	630	540	514	501	617	591	474	290	259	305	280
Repair trade	thous. of pairs	....	3,975	4,946	4,058	5,355	6,994	5,924	4,537	4,622	3,431	4,575	3,785	2,656
Shoe manufacturers	thous. of pairs	....	9,693	10,522	11,177	11,653	9,724	7,484	6,610	8,198	8,704	8,748	9,424	6,938
Stocks, end of month	thous. of pairs	....	28,491	27,898	27,006	25,832	23,952	24,652	25,213	24,405	24,515	25,807	27,933	28,340
Rubber soles														
Production	thous. of pairs	....	2,885	3,177	2,864	2,933	2,880	2,610	2,840	3,639	3,411	3,461	3,953	2,292
Shipments														
Export	thous. of pairs	....	62	59	67	67	90	45	29	25	8	3	2	1
Repair trade	thous. of pairs	....	330	225	196	234	290	370	308	267	264	285	252	252
Shoe manufacturers	thous. of pairs	....	2,651	2,899	2,569	2,790	2,604	2,273	2,579	3,196	2,954	2,925	3,320	2,087
Stocks, end of month	thous. of pairs	....	2,655	2,461	2,475	2,395	2,264	2,153	2,180	2,018	2,085	2,428	2,691	2,759
Mechanical rubber goods, shipments														
Total	thous. of dollars	....	4,231	3,879	3,706	3,356	3,015	2,678	2,300	2,381	2,463	2,446	2,638	2,613
Belting	thous. of dollars	....	790	798	914	802	788	601	483	474	483	483	491	430
Hose	thous. of dollars	....	1,857	1,650	1,436	1,161	1,041	972	856	919	903	966	1,174	1,251
Other	thous. of dollars	....	1,584	1,431	1,356	1,393	1,186	1,105	961	988	1,077	997	973	932

Source: *Survey of Current Business*, Bureau of Foreign and Domestic Commerce, Washington, D. C.

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Many are the rubber products that are called on to resist hard usage and age. Their success is greatly dependent on the Carbon Black used in the mix. This Black should be perfectly uniform and possess suitable properties. The United Carbon Company's Dixie & Kosmos Rubber Blacks are subjected to such stringent control thruout the entire manufacturing process that their quality is unquestionably dependable.

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CHARLESTON WEST VIRGINIA

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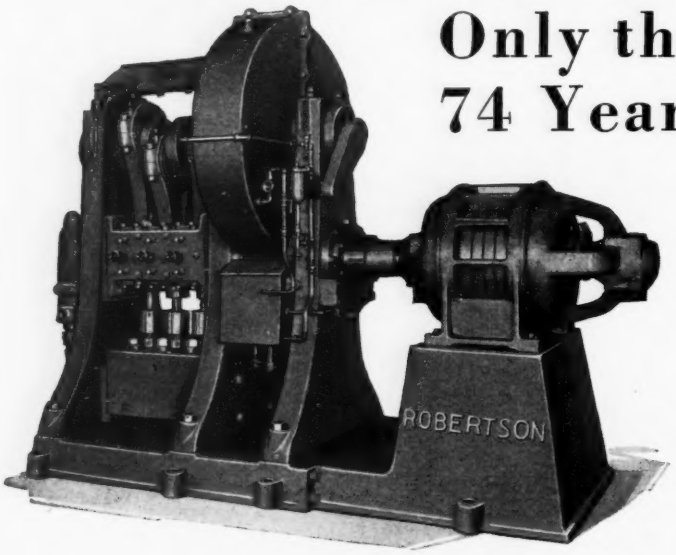

Only the "best" of 74 Years' Experience..

..is built-into this HIGH PRESSURE PUMP

Experience is a great Teacher,—and unquestionably he who profits most from "experience" is in a position to serve best . . . Quite naturally, we have learned considerable during our long time in business,—so when we say that ONLY THE "BEST" OF OUR EXPERIENCE is built into this IMPROVED Robertson Pump, it really MEANS A GREAT DEAL.

Such equipment as High Pressure Pumps is not purchased or replaced frequently,—the purchaser looks for and expects LONG, TROUBLE-FREE, DEPENDABLE SERVICE,—and with the IMPROVED Robertson Pump he gets it. There are 16 FEATURES of this Pump which EXPLAIN WHY. Would you like to know them,—without obligation?

NOTE

Remember, Robertson makes all types of Lead Encasing Equipment used by Rubber Hose Manufacturers: Extrusion Presses, Pumps, Melting Furnaces and Pots, Dies and Cores, Strippers,—and the new Hydro-Pneumatic Accumulator. Literature upon request.

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TONOX

IN HEAVY DUTY TIRES

Our Reclaim Department handles annually a good many millions of discarded tires. A fair percentage of these are heavy duty or bus truck type. Studies of their condition tell us that failure has occurred almost always in the carcass or at the bead. Several things might possibly be done to improve this and one of these is a change in the compounding of the rubber applied to the cord or fabric.

A special chemical, TONOX, has been developed in our laboratories that, judged by results obtained in flexing tests on a great number of carcass pads, has the value of very materially prolonging the time required to bring about ply separation. Wheel tests of tires on the government type tire testing machine have confirmed the laboratory flexing results.

Products other than tires, such as fan belts and high speed transmission belting, that must withstand very severe flexing punishment might be improved with the use of TONOX.

TONOX is easily applied in carcass compounds, is low in cost and undoubtedly desirable for the purpose described. It would not cost much to check our recommendations, and laboratory assistance on compounding and flexing tests is gladly offered.

THE NAUGATUCK CHEMICAL COMPANY

1790 Broadway, New York City

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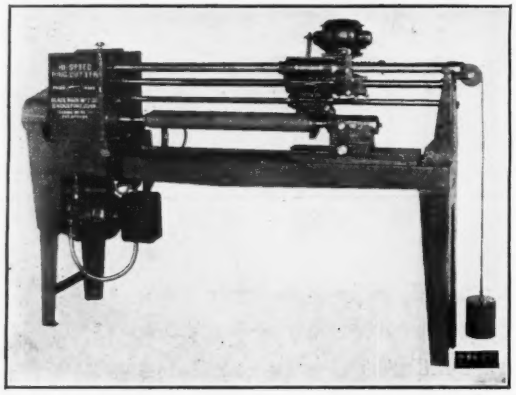
PREPARE FOR 1933



4-BX Jar Ring and Washer Cutting Machine

The turn in business has come. Jar ring and washer manufacturers should prepare for next season's business.

This new jar ring and washer cutting machine is the speediest and most accurate cutter ever built for this class of work.

Our long experience in ring cutting has enabled us to build a machine which embodies the latest mechanical design together with all the features desirable in a fast, accurate ring and washer cutter.

Investigate this money saving, speedy machine

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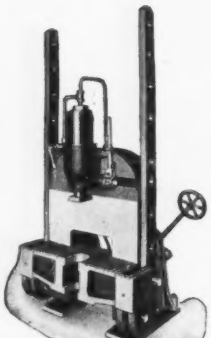
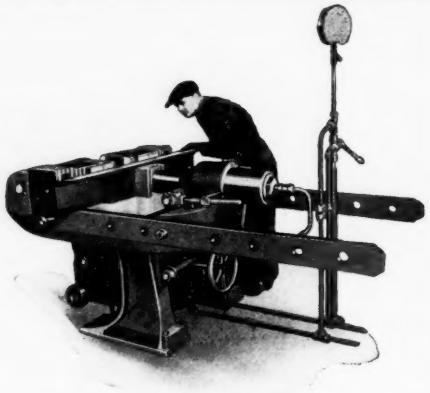


Showing Press in Vertical Position

Showing Method of Changing from Vertical to Horizontal Position



Showing Press in Horizontal Position. It can be extended to full length of Rods

Now you can equip your shop with one

HYDRAULIC PRESS

that will take care of all ordinary pressing, forcing and bending operations.

The press is a composite unit consisting of the following:

60 ton Pipe Bender
60 ton Shaft Straightener
Small Hand Power Arbor Press
60 ton Horizontal Forming and Bending Press
60 ton Die Sinking and Upsetting Press
60 ton Vertical Forcing Press

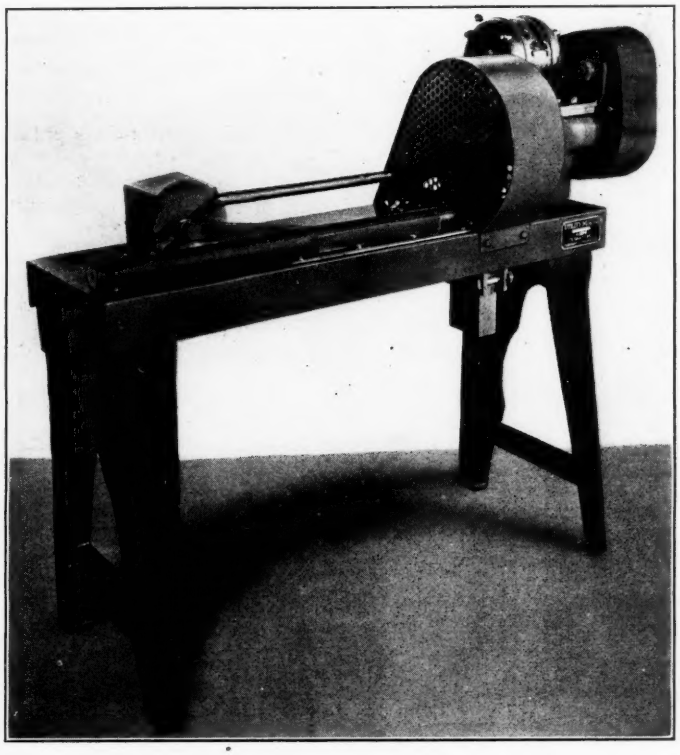
It can be used in the vertical position for bending, straightening, forcing, etc., or it *can be tilted back into a horizontal position,* when it becomes a *horizontal forcing press* of great capacity. Write for Bulletin B-22.

THE WATSON-STILLMAN CO., 116 Aldene Rd., Roselle, N. J.

New York, Chicago, Philadelphia, Pittsburgh, Detroit, St. Louis, Cleveland, Cincinnati, St. Paul, Seattle, Denver, Portland, San Francisco, Los Angeles, Houston, Atlanta, Birmingham, Richmond, Tulsa.

OUR LABOR SAVERS — YOUR MONEY MAKERS

A NEW MACHINE TO MEASURE AND CUT STOCK FOR MOLDING



Will measure to length and slice or cut your tubed plastics to length at 100 to 300 pieces per minute.

Will take any shape of cross section from ¼″ to 2½″.

Will cut from a slice up to six inch lengths.

It has a 3 to 1 variable speed drive and constant speed motor.

Built for hard service and high speed.

All adjustments easily made for length or cross section change.

A NECESSITY IN EVERY PLANT WHERE PLASTICS ARE MOLDED.
CUTS THE STOCK TO CAVITY VOLUME, REDUCING THE OVERFLOW.

Send Us Samples of Your Stock, Which We Will Cut and Return to You for Inspection.

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Footwear Manufacturers Are Making

A BETTER PRODUCT

at Less Cost with

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CARBON BLACK

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GASTEX disperses readily, giving a smooth calendered stock with uniform shrinkage.

2. **UNIFORMITY**

GASTEX "process control" method of manufacturing insures absolute uniformity of physical and chemical properties.

3. **NON-STAINING**

Because GASTEX contains no volatile matter, it is non-staining when used under white stocks.

4. **LOW PERMANENT SET**

GASTEX gives a lower permanent set than any other compounding pigment.

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Compounds containing GASTEX have better aging than those containing channel black.

6. **POROSITY**

Low moisture and faster rate of cure of GASTEX makes it possible to cure compounds containing it in dry heat or open steam without any porosity.

Unless many of the biggest footwear manufacturers in the country are mistaken, it will pay you to use GASTEX. Let us send you samples.

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(Owned and controlled by Henry L. Doherty & Co.)

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American Representatives--HERRON & MEYER

New York — Akron — Chicago

KAUTSCHUK

MONTHLY PUBLICATION

of the

Deutsche Kautschuk—Gesellschaft

(Scientific Association of All Chemists and Engineers employed in the Rubber Industry)

The first issue appeared in August, 1925. The important position of this journal to the whole Rubber Industry and Science will be seen by the following short summary selection of the articles published—from this time:

R. Pummerer: Zur Kenntnis des Kautschuks und seiner Fraktionen.

H. Staudinger: Über Isopren und Kautschuk.

H. Fikentscher und H. Mark: Über ein Spiralmodell des Kautschuks.

G. Fromandi: Adsorptionschemische Studien über Kautschukfüllstoffe und Kautschukmischungen.

P. Stamberger und C. M. Blow: Zur Frage der Solvatation hochmolekularer Substanzen.

F. Emden: Über Vulkanisationsbeschleuniger und ihre Anwendung.

A. van Rossem: Das Auftreten von atmosphärischen Rissen in gedehntem Kautschuk.

H. I. Waterman, R. H. Dewald, und A. J. Tulleners: Beitrag zur Kenntnis des Berginisierens von Rohkautschuk.

E. A. Hauser und G. v. Susich: Röntgenographische Untersuchung des Guttapercha-Kohlenwasserstoffes.

F. Kirchhof: Untersuchung über den Mangan—und Eisengehalt verschiedener Rohgummisorten.

P. Scholz und K. Klotz: Beiträge zur Latexchemie.

E. Wurm: Neuzeitliche Herstellung gummierter Gewebe.

H. Beckmann: Der mikroporöse Gummi, Herstellung Eigenschaften, Verwendung.

H. Brandt: Temperaturerhöhungen an laufenden Gummigewebetreibriemen.

L. Piatti: Die Rückgewinnung flüchtiger Lösungsmittel.

K. d'Huart: Kohlenstaubfeuerungen in der Gummi-Industrie.

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YOU CAN'T GET *THIS* FROM A PLANTATION!

DON'T forget that when you buy reclaim you can expect more from your source of supply than you did when using crude rubber.

If you're using nature's raw materials you don't expect to have them changed to suit manufacturing processes or even to bring improvement in products. Nature doesn't change her formulae so easily.

At Philadelphia Rubber Works Company, however, a busy laboratory is constantly changing, testing, improving the many kinds of reclaimed rubber. Changes are made to meet the immediate needs of specific industries or specific manufacturers. Ways of using reclaim economically are studied. Money is saved for users, both in their purchases and in their operation! Even methods of reclaiming are improved—so that costs of reclaim are lowered.

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Of course it isn't difficult to do this. But, for example, have you seen a Philadelphia Rubber representative lately? Wouldn't it be well to do so?

Why not write today, to Philadelphia Rubber Works Co., Akron, Ohio?

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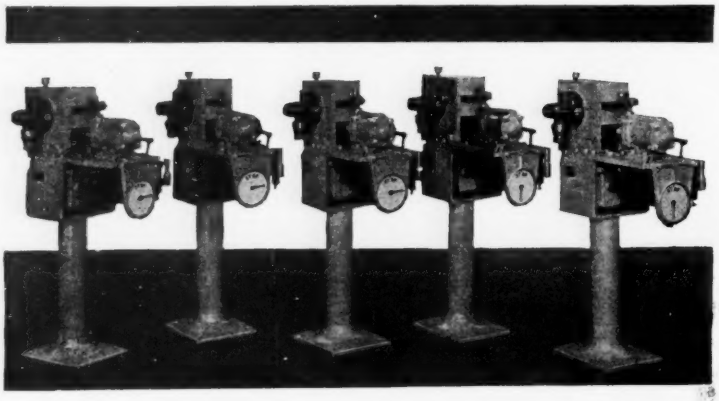
PHILADELPHIA RECLAIMS



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Automatic Operation for Hydraulic Molding Presses with Yarway Two Pressure Valves

Whatever molding operation is necessary, it can be accomplished automatically through the use of the Yarway Automatic Two Pressure Hydraulic Valve. A standard hydraulic valve is actuated by a motor-driven attachment and timing arrangement, which can be applied to the operation of any type of molding press.

We solicit inquiries from manufacturers of molded products and offer the services of our engineering department in this connection. Let us send Bulletin H2C, describing this and other types of hydraulic valves for all pressures to 5000 lbs.

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Official Organ of the French Rubber Industry

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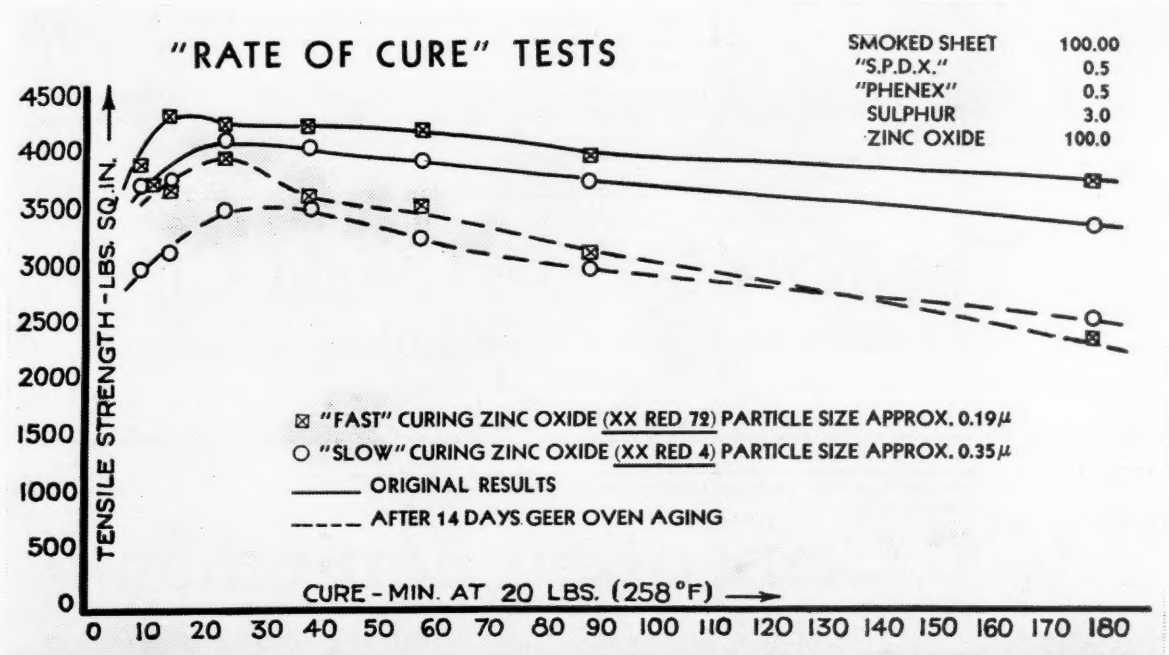
No. 7 of a series of advertisements showing a comparison of "fast" and "slow" curing zinc oxides with typical accelerators.



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Both "FAST" and "SLOW" CURING ZINC OXIDES

New Jersey zinc

Send for the new booklet "Zinc Oxide—Incorporation in the Banbury Mixer"

The New Jersey Zinc Company

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If you are in any way interested in Core Building . . .

It will pay you to read all of this Statement!!

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Winch Type Master Chuck!!

The chuck that insures Time Saving, Labor Saving, Better Tires, Low Maintenance.

No more wobbly cores. The uniformity of the core while in operation is a very redeemable feature. This fact makes it possible to build a smoother, better tire.

The Winch Type Master Chuck insures all of this and more too. This chuck does the work instead of the tire builders. It strips the tire completely, thereby eliminating the drudgery from this work—and does it quicker.

Slightly lower in price, too, than the old style chucks.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

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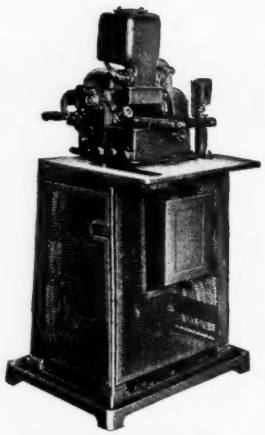
Rotary Cementing Machine Model RB

THE ROTARY CEMENTING MACHINE —MODEL RB, for cementing insoles, is motor-driven, floor type, with a capacity of 15,000 to 20,000 pairs of insoles daily.

THE USMC DOUBLE CEMENTING MACHINE —MODEL B, is especially designed for cementing both sides of rag fillers, juniors, etc. A floor machine, motor-driven, with a capacity of 12,000 to 15,000 pairs daily.

The installation of these machines will enable rubber shoe manufacturers to handle efficiently their major cementing operations with appreciable savings in labor, cement, and floor space.

Machines may be used as separate units, or in conjunction with a conveyor system



USMC Double Cementing Machine—Model B

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Brockton, Mass.....93 Centre
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Cincinnati, Ohio.....407 East Eighth
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You can be certain of perfect workmanship—proper attention to every detail—and that delivery will be made at the promised date.

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The exactness and quality of our service has pleased practically all of the most particular buyers of tire molds.

You, too, can profit by placing your orders with us. We will greatly appreciate the opportunity to quote on your jobs, and assure you that every confidence is fully respected.

We are also the makers of Tyrwelder Tire Repair Equipment

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Home Rubber Company
Trenton, N. J.

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Speaking of N. B. O. Black Sheet Packing, we must admit that it holds its own.

The writer recently called at a planing mill in this vicinity and there found a piece of N. B. O. Black Sheet Packing that had been lying on a shelf in a closet where the temperature conditions were rather warm, and found that this piece of packing was sold to the customer about 16 years ago. This speaks rather well for N. B. O. Black Sheet Packing.

We are enclosing sample of the same to show you that it still retains its elasticity.

Yours very truly,

*

*This letter was received from a customer in December, 1930 (name on request).

N. B. O. is noted for its long life, that's the Packing you need. Specify N. B. O. and look for the diamond trade-mark.

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HOME RUBBER COMPANY

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What is the Reason Why STOKES HARD RUBBER is used so extensively ? ? ? ? ?

Many manufacturers are using it today in preference to any other material, and they say it excels in quality and is more practical. There is no doubt but that you have something that can be better made in HARD RUBBER—Why not try it?

This Foot Bath is an essential piece of equipment for GYMNASIUMS, SWIMMING POOLS, LOCKER ROOMS in SCHOOLS, CLUBS, COLLEGES. Tell your friends about it.

STOKES GENUINE HARD RUBBER
FOOT BATH
For prevention of Athlete's Foot

TRENTON, N. J.

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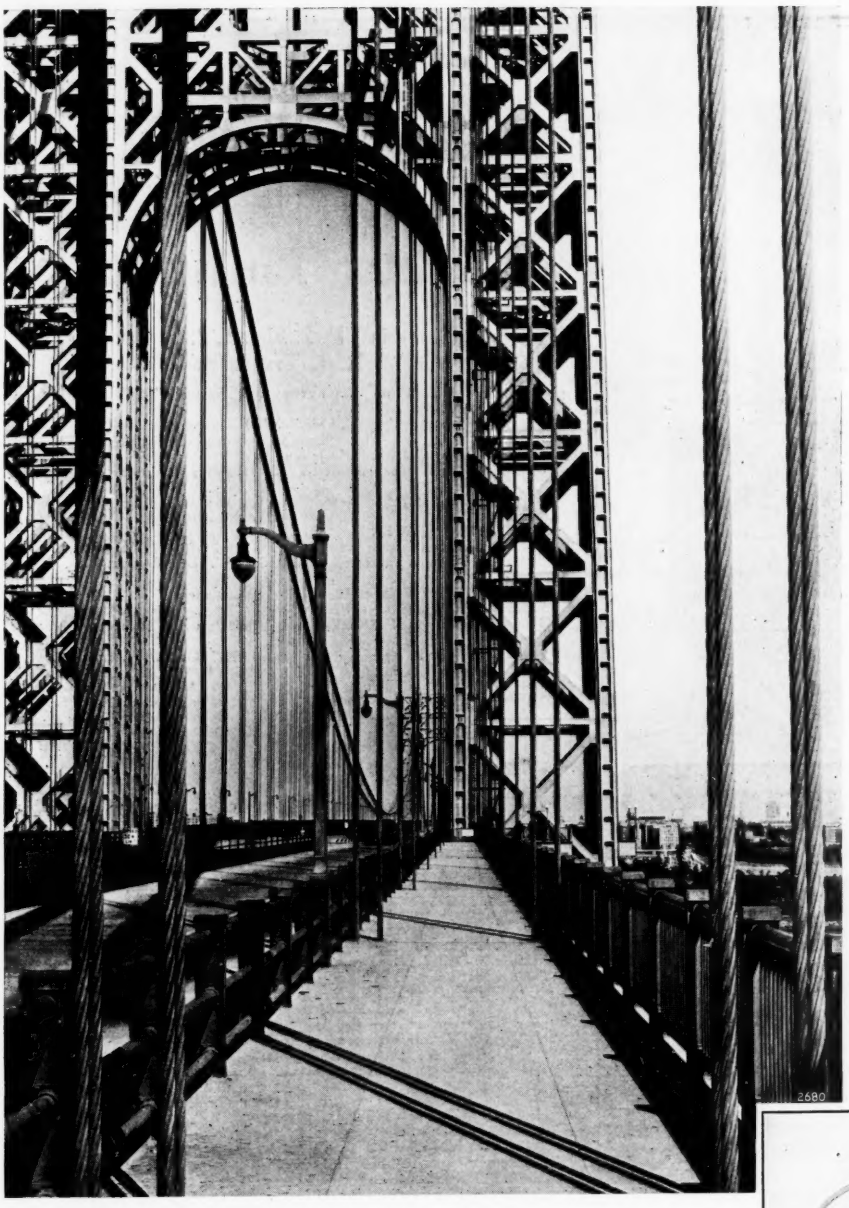
why you should use hard rubber with this TRADE MARK in YOUR PRODUCT.

Reg. U. S Pat. Off.



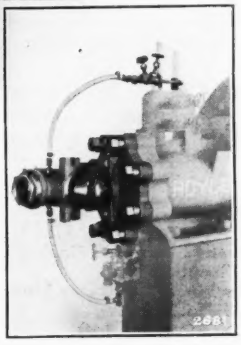
. . . A Single Strand

of wire does not support a great bridge. Thousands of strands twisted into great cables do the work.

ROYLE Rubber Tubing Machines do not depend upon a single feature to support their reputation.

Thousands of items of experience, gained through 50 years of tubing machine building, give them *many* points of advantage.

You cannot afford to ignore Royle superiorities. The points which make Royle tubers reliable and trouble-free also make them profitable machines for you to use.



One of many types of Royle heads used for covering and insulating.

THE leading makers and insulators of wire use Royle Insulating Machines, for covering wire with rubber, plastic or flux.

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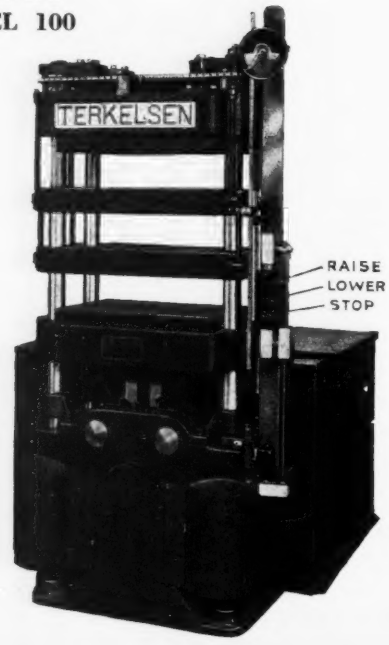
TERKELSEN

TYPE E-2
MODEL 100



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The ELECTRO-DRAULIC has set a new standard in press equipment. They possess features impossible on other types of equipment.

Self-Contained Molding Unit
Adjustable Pressure
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Automatically Opens at End of Curing Period
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OTHER ADVANTAGES ARE

increased toughness, flexing, heat resistance and low permeability tests.

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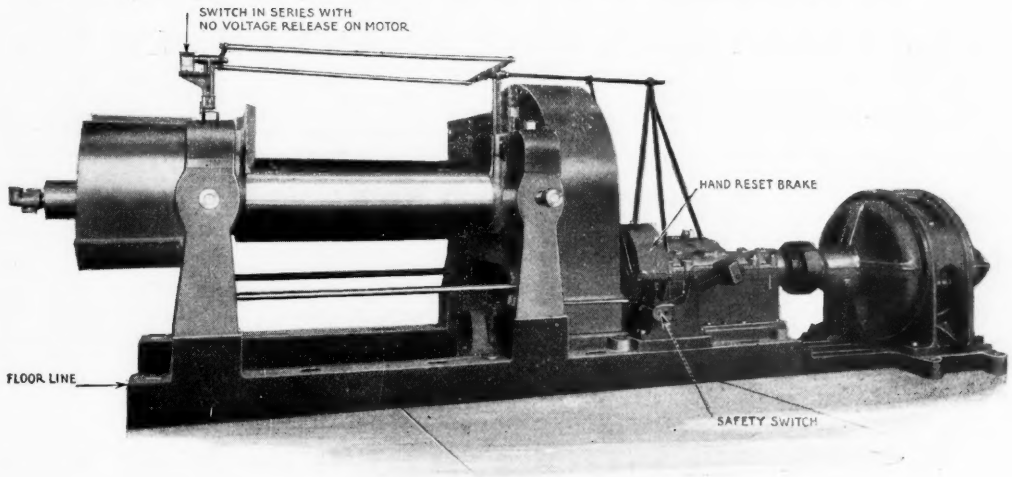

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18" x 50" " 75 or 100 H. P. Motor, 720 R.P.M.
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A trade journal for the Rubber, Gutta-Percha, Asbestos, and Celluloid Industries and Their Allied Trades.

WORLD WIDE CIRCULATION FOR THE RUBBER GOODS TRADE

PUBLISHED EVERY FRIDAY

Subscription in Germany, RM 24 Per Year. Subscription in Other Countries, RM 32 Per Year.

An excellent advertising medium for those wishing to establish trade connections in Germany.

MAIN OFFICE **GUMMI-ZEITUNG** Krausenstrasse 35/36, Berlin S.W. 19, Germany

WESTERN RUBBER COMPANY

Manufacturers of Rubber for the Industries

We Supply

Automotive Manufacturers — Plumbers Brass Goods Manufacturers — Railroads
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Factory at Goshen, Indiana

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GIVE YOUR
RUBBER STOCKS
GREATER
SALES APPEAL
WITH...

TITANOX-C

The surest way to attract more buyers for your rubber goods is to improve quality...give your products new sales appeal. • Many rubber manufacturers are using Titanox-C (calcium base) to produce clearer, brighter white stocks. They also find that this remarkable pigment helps produce brighter tints in colored rubber goods. • Titanox-C, containing 30% pure titanium oxide, is the brightest of all white opaque pigments. It is exceedingly fine in particle size. It is chemically stable and inert. It has exceptional tinting strength. • Ask us to send you helpful information about the use of Titanox-C in rubber manufacturing.

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Manufacturers of . . . TITANOX-B (Barium Base)
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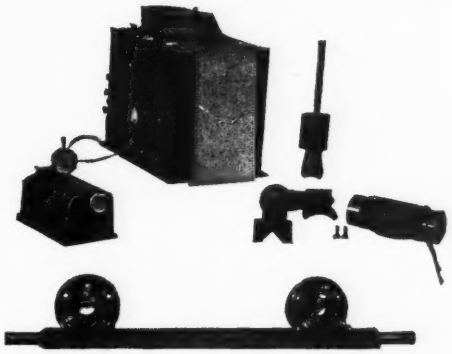

THE SCHUSTER MAGNETIC GAUGE

Important!

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THE correct thickness of your rubber stocks is too weighty a question to gamble with. You must *know!*

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Designed for modern production requirements of higher pressures, greater accuracy, uniform temperature and maximum output.

Built in any size from 12" square up to 108" wide by 36' 6" long . . . . any number of platens—hot or cold . . . . any size and number of rams . . . . any pressure.

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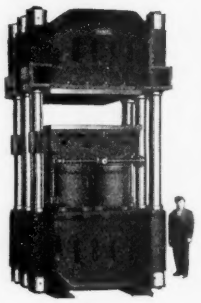
If you have a hydraulic press problem our engineers can help you. They have a thorough knowledge of hydraulic equipment accumulated in the building of thousands of presses for rubber, plastics, linoleum, tiling, grinding wheels, metal working, etc.



The 2,000 ton Press illustrated above has 80" x 110" platens of rolled steel drilled for steam circulation. Six 21" diameter rams give a total pressure of 2,000 tons with an initial water pressure of 2,000 pounds per square inch. Top and bottom crossheads are very heavy and rigid, being 5' 0" in depth and weighing 50,000 pounds each.

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THESE MACHINES HAVE A CAPACITY MANY TIMES IN EXCESS OF HAND CUTTING. MANUFACTURED OF THE BEST MATERIALS AND WORKMANSHIP BUT LITTLE ATTENTION IS NECESSARY TO KEEP THEM IN SERVICEABLE CONDITION. THE SOLES CUT ARE OF SUCH STANDARD BEVEL AS MAY BE DESIRED AND POSSESS A SMOOTH AND ATTRACTIVE EDGE ADDING MUCH TO THE APPEARANCE OF THE FINISHED SHOE.

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Engineers and Machinists

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Randall & Stickney Rubber Thickness Gauge

Send for catalog and revised price list

For measuring the thickness of rubber, paper, textiles and similar materials. Graduated in .001 inch (and in .01 mm when so ordered). Also supplied with weight in place of spring.

HEIGHT 7½ inches.

WEIGHT 4 lbs.

DIAL 1⅞ inches diameter, graduated 0—50.

CAPACITY ½ inch.

Standard of measurement in Rubber Factories for over forty years.

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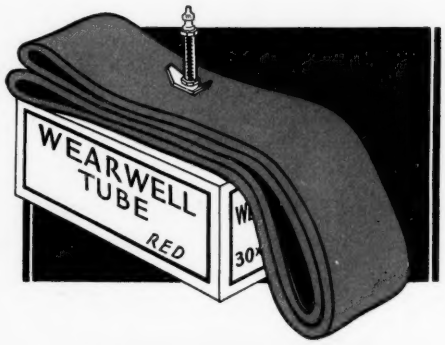
THE CHEMIST CAN AID SALES PROMOTION!

next to

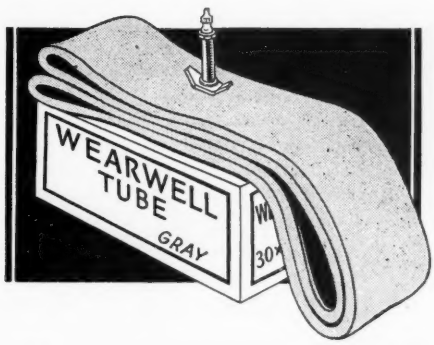
"THE BEST QUALITY at the LOWEST COST"

comes

"APPEARANCE"



The appearance of this clean bright red stock suggests the idea of purity, careful manufacture, – vitality.



The appearance of this shabby gray stock suggests the idea of impurity of materials, carelessness in manufacture,–lack of vitality.

While these two tubes may give equally good service, their appearance is not equally impressive.

This appearance is most wisely obtained by the selection of a Red Pigment which is entirely free from acid, alkali, copper, manganese;-one which will not bleed or fade,-one which will not affect the ageing adversely.

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meets all of these requirements.

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NORMAL, CONCENTRATED, PROCESSED and STANDARDIZED LATEX

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Heveatex presents a new, effective, economical method for improving many products—producing new products—increasing profits. No progressive rubber manufacturer can afford to overlook these present or prospective possibilities. Correspondence Invited.

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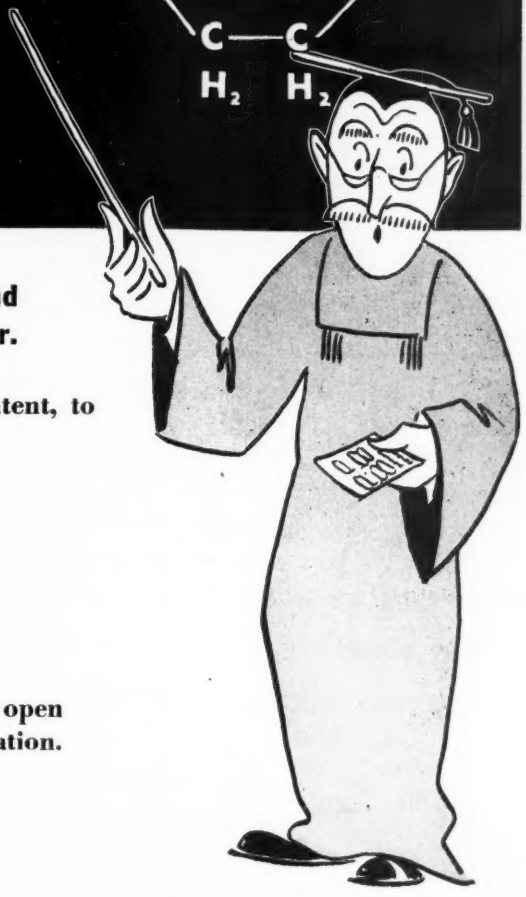
TETRONE A

(Di-pentamethylenethiuramtetrasulfide)



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Use from 1.25% to 1.75% based on the rubber content, to produce fast curing compounds that . . .

1. ARE SAFE to handle under normal factory conditions.
2. HAVE an exceedingly long range of cure.
3. DO NOT discolor or stain metals.
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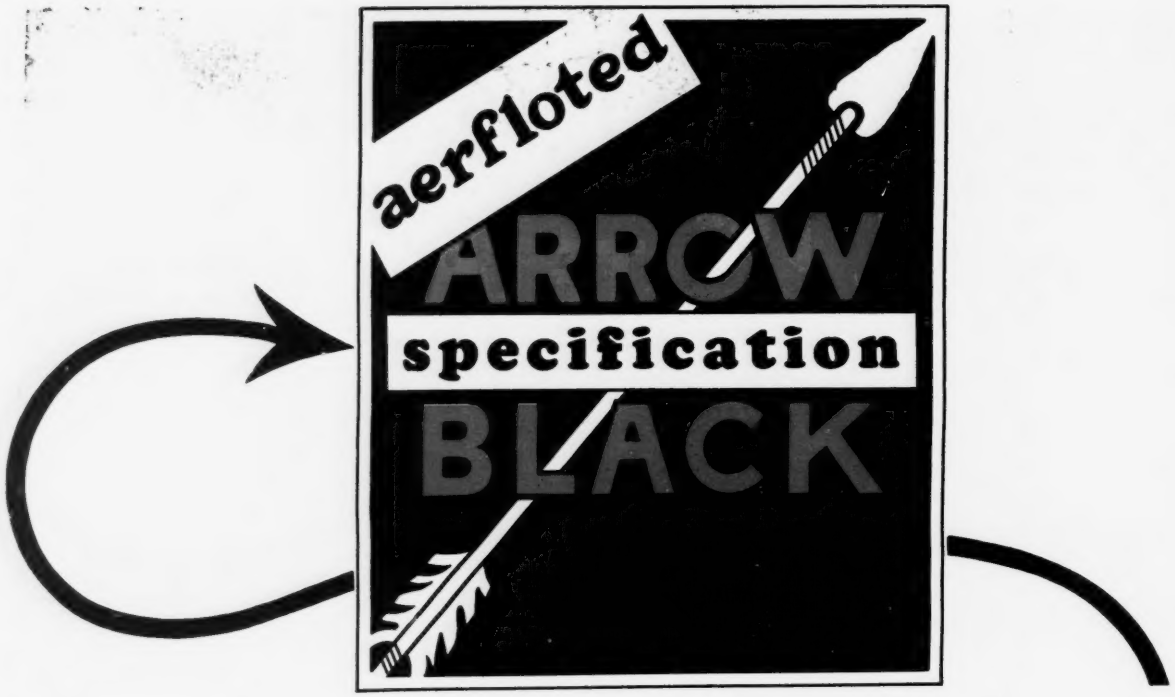

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The flexing behavior of rubber compounds is becoming of increasing importance—especially in the compounding of tire treads and sidewalls.

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